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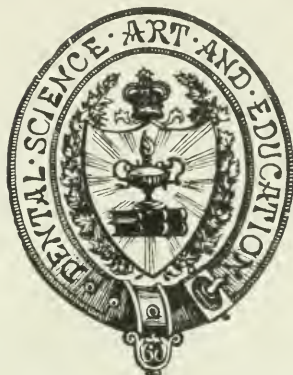
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DOMINION DENTAL JOURNAL

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Dominion Dental Journal

VOL. XXX.

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No 1.

Original Communications

THE TEETH IN THEIR RELATIONSHIP TO CUTANEOUS DISORDERS

HUGH MCKAY, M.D., Winnipeg, Man.

Read before the Winnipeg Dental Society, November 13th, 1917.

Mr. President and Gentlemen:

The subject which I have chosen for this brief paper is entitled "The teeth in their relationship to cutaneous disorders." Several years ago it was pointed out, and the viewpoint was supported by strong clinical evidence, that in a considerable percentage of cases of pernicious anæmia the underlying and too long unsuspected etiological factor was buccal infection. Since that date the routine examination of the teeth has received greater attention than formerly from medical practitioners. I need scarcely point out, however, to a gathering of dentists, that physicians as a class are not yet fully alive to the significance of morbid processes about the teeth and have not a proper appreciation of their hidden potentialities for harm.

It is a matter of common knowledge that many cases of gastric disturbances are treated for long intervals with various nauseous mixtures when all the while the mouth was in a vile condition and nature's mute appeal for aid was disregarded, because unheard and unrecognized. One cause of this regrettable attitude is the scant attention paid to this important matter by clinical teachers in the medical schools.

Any intelligent survey of abnormal dermatological conditions presupposes a searching inspection of the mucous membranes, which under another name, and performing a different physiological function, are part and parcel of the cutaneous structures. This applies with special emphasis to the mucous membrane of the mouth. A correct interpretation of

these pathological conditions is of the greatest possible value in reaching conclusions as to the nature of the case, and not infrequently furnishes the key that unlocks the mystery from a diagnostic viewpoint.

At my dermatological clinic in the General Hospital, any abnormality found in the mouth received the appropriate treatment. Diseased teeth were attended to in the dental department and tonsils and adenoids in the nose and throat clinic. This was done on general principles. Gradually it was borne in upon my mind that these morbid conditions were more than incidental, that the absorption of toxins from these storm centres in the mucous membrane, about the teeth and in the tonsils, reacted upon, aggravated and prolonged, if they did not cause, various inflammatory processes of indeterminate etiology in the epidermis.

The publication of the epoch-making discoveries of Rose now and Billings on focal infection found my mind in a receptive mood, and I straightway applied their teaching in its entirety to the field of dermatological practice.

In many of the chronic dermatoses, the results of treatment by the recognized remedial measures in these affections, were found to be in the highest degree disappointing. In looking about for more hopeful methods, I tried out the stock vaccines with gratifying results in several cases. It was in the search for an autogenous vaccine that the culture was first taken from the teeth. The first case on which this method was tried was one of chronic psoriasis disseminata, in April, 1916.

Since then I have tested this procedure in various cutaneous disorders. While not universally successful, I think it promises well and is a distinct advance over pre-existing lines of therapeutic attack. In a few cases, the X Ray revealed alveolar abscesses and rarefied areas where these were entirely unsuspected by the patient and were not capable of clinical demonstration. In several cases multiple foci of infection were in our opinion present. In addition to the teeth another focus was found frequently in the tonsils, sometimes in the nose, in the middle ear, and in other organs of the body. The technique of taking the culture is in my judgment of great importance. The smear should be taken under rigid asepsis, the diseased area disinfected, the culture taken from the socket rather than from the tooth, and the field padded off to prevent contamination by saliva.

CASE HISTORIES.

1. Harold E—, age 27, accountant. Chronic psoriasis disseminata, very advanced grade. Teeth in bad condition. In addition to local treatment with usually recognized applications, the patient was given an autogenous vaccine of the streptococcus viridans. Symptomatic cure. No recurrence when last seen one year after treatment.

2. Jas Poole, age 18, came under observation February 27, 1917. Chronic urticaria, seven years duration. Dermographism well marked. Much distress, itching, smarting and burning. Numerous decayed teeth extracted. Great relief ex-



Schorrhic Dermatitis of years standing, cleared up under autogenous vaccine from the teeth.



Chemic Urticana; seven years duration; numerous decayed teeth removed by Dr. Wood; dermatographism well marked; relief from subjective discomfort after extraction.

perienced. No dietetic restrictions whatsoever. Dermographism while not so marked still persists.

3. Wm. Wallace, pityriasis rubra with constitutional disturbance. Pyorrhoea alveolaris advanced grade. Given autogenous vaccine from the teeth. Gained 15 lbs. in a couple of months, still under treatment, great relief. This patient had secondary glandular involvement.

4. E. S. M— came under observation September 9th, 1917. Suffered from uncontrollable spasms of itching of the face, no pain, much weakened by loss of sleep and mental unrest, spasms recurred every few minutes day and night, speaking, swallowing or any muscular movement would precipitate a

seizure. Free salivation supervened, delirium set in, a zoster-like eruption appeared along the course of the intercostal nerves, no pain, condition lasted for three weeks, when convalescence took place. The only pathological condition found was one decayed tooth which was extracted and gave a growth of staphylo-streptococcus. Whether this caused this obscure malady or not, I do not know.



Pityriasis Rubra; six months duration; note the generalized distribution, free scaling, greatly thickened skin, with markedly exaggerated condition of the normal lines shown as transverse ridges on forehead and at the knees. Note also the greatly enlarged inguinal glands. Treated by autogenous vaccine, staphylococcus from the teeth. Gained 15 pounds in a couple of months.



Psoriasis Disseminata. Scalp especially bad; symptomatic cure following removal of multiple alveolar abscesses and the exhibition of autogenous vaccine. Many years' duration with no intermission.

5. Mrs. B—, chronic pityriasis rubra, multiple alveolar abscesses, given autogenous streptococcic vaccine, symptomatic cure.

Sam Greenberg, psoriasis disseminata, scalp specially bad, many years standing, symptomatic cure following removal of

multiple alveolar abscesses and the exhibition of an autogenous vaccine.

7. Marion W—, chronic psoriasiform seborrhoeic dermatitis, symptomatic cure under vaccine from the teeth.

8. Fred P—, age 63. Eczema of face and neck, of six years duration. Buccal infection. Teeth extracted. Condition cleaned up in a few days.

9. Baby Morrison. Impetiginous eczema. Ulcerative stomatitis with exfoliation of the teeth. Haemolytic streptococcus found in the blood. Fatal termination. Duration of illness while under observation six days.

This is an age when ideals are tried as by fire and burned in the crucible; when the intangible, impalpable, and non-material alone endures. The highest ideal of your profession and of mine is that of service. For the furtherance, maintenance and practical exemplification of that ideal, witness the magnificent record of the Canadian Medical Corps in the world war, and the no less brilliant and inspiring achievements of the Canadian Dental Corps in the same theatre of action.

In practice, the only thing that matters much is the results. If these methods will lighten the burden of a class of sufferers that in the past have received all too scant consideration from the medical fraternity; if they will in any measure lessen the impact of the blow; if they will restore to useful stations in life those who are incapacitated because of these infirmities, then these methods are entitled to the sympathy, consideration and support of both the medical and the dental professions.

If these views have any basis in fact, their general acceptance and regular application will very materially widen the scope of our activities; broaden our horizon and enhance the opportunities for service which we are capable of rendering society.

Through our joint activities relief may be afforded a large number of patients hitherto classed as incurable. Many of these drift into the hands of the quack and the charlatan simply because our treatment has proven ineffective, and has broken down under the acid test of every day experience.

In conclusion, may I express my appreciation of being asked to read a paper before your society on a subject which I have found one of absorbing interest. I wish further to express my warm appreciation of the assistance I have received

from several members of this association in the study and in the treatment of these obscure conditions. Without the information furnished by the X Ray, the apparent relationship between cause and effect would not have been so easily established.

"WHERE ARE WE AT" IN DENTISTRY?

F. J. CAPON, D.D.S., M.D.S., Toronto.

Read before the Odontological Club, Toronto.

Arriving in New York on Monday morning and registering as a guest in the National Convention, one was almost immediately landed into a hot cauldron of dentistry which never ceased boiling until the following Friday afternoon, and one naturally became so satiated with different ideas, different theories, and different practices, that it was a relief to have some kind friend take one by the arm and lead him down the corridor, steering two degrees south of west into a well-known committee room, where one was stimulated and heard arguments pro and con on old and new theories.

You ask me to tell you what struck me most forcibly while at the National? Well, that is a pretty hard chunk to pick out of the *pot pourri*, but after chewing it for a while, and before swallowing it for assimilation, I am forced to say that I came away with a great part of the chunk stuck in my throat, and undecided whether to let it go down or bring it back for further mastication. I was there just as a common dentist, trying to find from these scientists some panacea or workable standardization that would make dentists' miserable lives easier.

After spending an evening hearing orations from such reputable men as Rosenow and Noyes, and again listening to our renowned Canadian boy, Dr. Weston Price, I was forced to admit the most important lessons to be learned and digested and carried away from this great meeting were pathology and its different branches which pertain to this "bug-bear," foci of infection. Rosenow having proven without doubt that micro-organisms of the streptococcus-pneumococcus group found in the local foci are the cause in numerous cases of so-called rheumatism, endocarditis, pericarditis, myocarditis, arthritis, and others too numerous to mention, in various parts of the body.

Such warnings from such scientific men were sufficient, to follow up the cue, to rectify my mistakes in past practice, and

create, if possible, a system of treatment and operative technique suggested by the powers that be (*pro tem*).

Those of us who have gone through the last ten or twenty years of dentistry, know how vacillating the methods of treating a human mouth and teeth have been; a fad or fancy to-day may be ridiculed a couple of years hence, as are some methods and treatments of two or three years ago, which have already disappeared; but, gentlemen, to-day no department of dentistry is of such momentous importance to both patient and operator as pulp treatment and root canal operations.

According to the inferences drawn from the teachings of Mayo, Rosenow, Noyes, Black, Price, and others, our responsibilities are much more serious than most of us appreciate; our importance is much greater than most of us realize.

Realizing to the full the importance of that contemptible little pulp with its little root canal and the apices, with all the ills and suffering it can produce to humanity, I resolved to collect all the knowledge my brain was capable of holding and my fingers of producing, from what I heard and saw.

Rushing from one well-filled hall to another in search of the truth, I heard our friend Elmer Best give his excellent paper, which he had already given this club the pleasure of hearing. It was an excellent paper, and covered every detail. He was followed in discussion by the well-known Meyer L. Rhein, who differed but little in his technique; used acids and sodium potassium for process of enlargement of canals, but no medication, final results being equal; and who threw on canvas moving pictures.

Then Dr. Gethro, of Chicago, mounted the platform and proceeded to spill the beans. We all know and respect Dr. Gethro's work and sayings, and when he got up and differed in almost every detail from the former teachings, one of the common fellows like myself begins to get somewhat bleary, and asks himself: "Where am I at?"

He condemned the use of acids of any nature in the enlargement or cleansing of canals after the Callahan method, both of the other gentlemen having used and closely followed these methods. Dr. Gethro said a lot of good things well worth following, but when he said he enlarged all small canals by curetment process, using barbed broaches only, all I can say is, I should like to see him do it. He also warned that no instrument of any nature should ever go through the foramen, and fill to the apex and no further. I certainly will take off my

hat to Fred Gethro. So you see, friends, there is a wide difference of opinion and technique among these prominent teachers, when it comes to that little "point" called the apex.

Dr. Gethro was extremely blunt and severe in his protest against arsenic for pulp destruction, as he is convinced that arsenic is responsible for the injury to the investing tissue; it is a dangerous drug.

Now, if you will allow me to bring in what Dr. Buckley said in taking issue with Dr. Gethro *re* arsenic: "I must be awfully old-fashioned, I still use arsenic. Let me say this: If any of you can go home and treat pulpless teeth successfully from what Dr. Gethro has said here to-night, you can do more than I can. I am here to say that the removal of pulp tissue by pressure anaesthesia, in many instances, is a dangerous procedure."

So here again, gentlemen, "Where are we at?" when two such quoted gentlemen are at variance on a subject of vital importance to us all—the destruction of a living pulp, an almost every-day obligation.

Noted exponents are now proclaiming for conservation of pulps, while others just as noted cry out "Shame!" and call it criminal to leave a pulp under a shell or jacket crown. There again: "Where are we at?"

Following up my search for truth, I picked upon Dr. Fitte, of Cincinnati, to acquaint myself with what was good in ionization, as I had learned it had come to stay, and was proving a success in the sterilization of the infected area beyond the apex. Dr. Fitte was so chemically scientific that he was away above my head, but in his clinic on ionization, or "Electrolytic Treatment of Root Canals," the following day, I was able to collect considerable useful points in the process of ozonation.

I also heard good papers on fixed bridgework, and in discussion Dr. Gillett simply riddled the principles of fixed bridges in favor of removable pieces.

Then I heard a splendid paper by Dr. Knoche, of Chicago, entitled "An Effort to Fix a Standard of Crown and Bridge Work on Scientific Principles Consistent with Proper Requirements."

The discussion became very heated, and the two principles got wider and wider apart, and was so contradictory, that a young man, a recent graduate of Columbia University, got up

and very clearly and beautifully expressed his views by summing up the evidence, so to speak, and asked point blank what a young man looking for the truth is going to do about it, when such eminent men are at such difference of opinion and judgment. I am like the young man—"Where are we at?"

POINTS OF INTEREST, HISTORICAL AND OTHERWISE, CONCERNING THE ARMY DENTAL CORPS IN ONE END OF THE DOMINION OF CANADA

CAPTAIN JAS. M. MAGEE, St. John, N.B.

(Concluded from December Issue)

When war broke out in Europe and Canadian troops began to mobilize, it was found impossible to adequately deal with the question of teeth, and civilian dentists, notably in Toronto, by their services gratuitously given to the suffering recruits, brought to the proper authorities as nothing else ever could have done, the realization that the dental surgeon was an indispensable adjunct to the army. Dr. Thomson's establishment and organization were adopted almost in its entirety.

While not parallel with the Confederation situation the two points regarding the Canadian Army Dental Corps and the Dominion Dental Council are here recorded as having emanated primarily from the Maritime Provinces.

Following closely upon the departure overseas of the First Contingent, which mobilized at Valcartier, where such dental services as could be were performed, Sir Sam Hughes fathered the infant establishment, the Army Dental Corps, and has ever championed its cause when attempts have been made to divert to other departments the control of this one which had so instantly justified its existence. It is quite possible that had a less fearless and independent Minister of Militia been confronted with the situation that developed, the Canadian Army Dental Corps would not as a corps be in existence now.

Having seen what the Canadian Army dental surgeons were accomplishing (we'll be charitable enough to assume their sole aim was to simplify administration) a memorial from the British Army Medical administration staff was sent requesting the taking over of the Canadian Army Dental Corps. The document passed through the various offices necessary for it to reach the Canadian War Office, and at each

successive stage received official approval until Sir Sam saw it. According to report a greater affront could not be given than that accorded the senders of this memorial at this point, for instead of acquiescing, Sir Sam, who never equivocates in matters where he considers right is right and wrong is wrong, bluntly wrote *refused*. This very incident alone is convincing evidence of the interest the Minister maintains in his latest Department.

When the question of a chief administrative officer was brought up, some little difficulty was experienced in making a selection, but it is a notable fact that, once the officer was selected, so far as known, there was not an dentist in Canada who did not pledge Lt.-Col. A. J. Armstrong his loyal support and assistance. A signal honor was conferred on four individuals whose names were submitted as qualified for the position of Chief Dental Surgeon. These were Doctors Geo. K. Thomson, of Halifax; A. J. Armstrong and W. G. Thompson, of Toronto, and Jas. M. Magee, of St. John.

Orders in Council have from time to time been passed, until now with 500,000 soldiers offered, and one dental surgeon to each 1,000 being authorized, the number of dental surgeons required may be five hundred. Each operator is allowed a sergeant (a prosthetic man) and a Batman.

In the different branches of military services there is a wide range. The greater the technical requirement in a unit the more intellectual the individual will be who is attracted, and the more highly educated the individual, the more likely he will be to have considered taking care of his teeth. If a small number of troops is to be trained there will be a culling out at recruiting stations of those whose dental apparatus is poor, and naturally there will be little care for many dental surgeons, but in the enlistment of half a million all otherwise physically fit men will be accepted, and be their mouths in good or bad condition it will be the duty of the Government to see that they are prepared so they will not be invalidated, as a result of dental trouble, after reaching the firing line. Experience with two score units, most of them infantry, has shown the writer that about 90 per cent. of recruits require dental treatment. The orders posted in the C.A.D. surgeries convey the information that as far as possible the services rendered are to be permanent. When we consider that fully 80 per cent. of those visiting our surgeries have never given the slightest care to their mouths, save to occasionally have an offending tooth extracted, it may readily be believed how great is the need of more dental surgeons.

To describe in detail one surgery would serve for every other surgery. Unlike private offices there must be uniformity of procedure. To compile statistics the same forms and reports must be used in all. In our surgery a card system has been adopted, which shows the date the man was examined and by whom, the various teeth (using the Ransome & Randolph enumeration) to be operated upon (one column for extractions and another for other operations), the kind of operation and the date of its performance, the initials of the operator who performed it, and an entry of the date the patient was dismissed as "completed." "Dental History Sheets" are made out from these cards and sent to officers commanding the units to which the men belong. Should a man have occasion to seek further dental treatment after going overseas, a reading of this dental history sheet will inform the operator what was done in the last surgery, and he is able to act intelligently should the record indicate that the offending tooth was receiving attention and departure for overseas prevented completion of the case, or that the patient failed to return for the further treatment required to complete it.

It is hard to determine which is the more laudable or meritorious position to occupy; that on overseas service or that on home service. There is, of course, a glamor connected with the more spectacular overseas which is lacking in the home service, yet the value of service rendered at home (if the troops remain long enough to enable the dental surgeon to "complete" all work) is far greater in proportion to the outlay involved in the latter than in the former.

The appointment, on Home service, of one dental surgeon to 1,000 men, requires a little thought to determine if that is a sufficient number. The number would be sufficient if they were all appointed and ready for work when the Government named the number of troops to be sent overseas, and the first few thousand soldiers remained in Canada long enough to have all necessary work completed. As men were enlisted the dental surgeons could at once get their work under way, and as the completed battalions were sent overseas the number of dental surgeons left behind would, pro rata, be increased. Consequently the dental services would be more promptly completed. That, however, is not the way the matter of dental service worked out, though in all fairness it must be said that looking backward in a situation new to the whole world, it was never anticipated that there would arise the need for several hundred dental surgeons.

When it was decided to send dental surgeons overseas applications poured into Ottawa's mail bags. Naturally the thought came to everyone who desired an appointment, that "first come would be first served." A wise decision was made when the order was issued, that in proportion to the number of soldiers enlisted for overseas in the different divisions dental surgeons would be appointed. This rendered it possible for every section to be represented on the draft.



This is a notable group from the viewpoint of the camp. The chief figure is, of course, the Duke of Connaught. To the left of His Royal Highness on the step stands the camp commandant, Col. W. E. Thompson. At his right, with walking stick aslant, is Lt.-Col. J. Hayes, A.D.M.S., and under the window is Col. A. H. Borden, Brigadier of the Nova Scotia Highland Brigade. In the doorway stands the Military Secretary, and just outside the door on the top step stands the A.D.D.S., Capt. Jas. M. Magee.

The Province of New Brunswick has contributed largely from the ranks of the dental profession. More than twice as many officers have entered the service from New Brunswick as from Nova Scotia, which has a much larger number of practitioners on its register.

Personally, I have considerable pride in contemplating this fact, because a good many of them became commissioned as a direct result of my own example and solicitation. Knowing how much work was required, and how little time there was in which to do it, I have ever tried to induce the best operators to enter the service. Manifestly for various reasons many of our best operators could not tender their services. Circumstances prevented my going overseas with the First Contingent, circumstances still continue to hold others who are doubtless quite as patriotic and loyal as I.

When I return to civil life at the close of this horrible war (or even before that if my services are no longer required), I can do so with the consciousness that I have done all that I could. I can take with me a pardonable pride in the knowledge that I had a hand in bringing the Dental Corps into existence, and helped in its upbringing as a member of it.

Note.—I take pleasure in showing the accompanying picture snapped by one of the Nursing Sisters at Aldershot Camp. H.R.H. the Duke of Connaught had just stepped out of our surgery after making an inspection.

SOME THOUGHTS ON TEACHING DENTISTRY

An address to the Faculty Council of the Royal College of Dental Surgeons of Ontario, by the Dean.

It is safe to say that most instruction is given privately, and that most knowledge is acquired without instruction. Information acquired or the collection of a great number of facts is of little value without experience. The school of experience corrects up acquired information and shows the weak spots in a false education. One often wonders if the education we attempt to give young men in this College best fits them for the calling which they intend to follow. Are we teaching dental stunts or are we teaching principles of dental practice? Do all these details, which we teach young men, prepare them the better to solve life's problems, or are they a conglomerate mass of facts in the minds of our graduates leading nowhere except to a living and to the ends of root canals? One is led to believe the answer should be in the affirmative.

Instruction in Dentistry can be used as a means of inculcating the broad principles of life and conduct, just as well as Hebrew or Greek, if the teachers were as well prepared and as broadly educated as they are in Academic

seminaries. The whole difficulty is, the subject is all so new. A subject may be taught in a way to develop and strengthen the mental faculties or it may be taught so as to deaden them. A method of instruction, which runs contrary to nature's method of acquiring knowledge, not only fails to help the student to learn what is presented, but blunts his faculties and hinders him from learning other things. We need no better example than the old method of teaching the English Alphabet as a means of learning to read, or the multiplication table being taught before addition, or the time honored method of trying to teach all the definitions concerning a subject before a general view is acquired, or the fruitless task of attempting to teach a student the names and uses of the whole dental equipment before he needs to use them, or that most deadening and fatal method of learning Anatomy out of a book, or that other anomaly of attempting to teach the minute Anatomy of the human body (Histology) before the student has heard tell of or seen a gross specimen. What crimes are committed in the name of teaching and education, and mostly by men who in the words of the late Dr. McLelland, "Heaven born teachers who did not need to study Psychology or methods of teaching."

All early experiences in a subject must be acquired by the sensations of touch, sight, hearing and taste. It is only after a sufficient number of these sensations have been experienced that the human mind can grasp a thought. New thoughts are interpreted only through past experiences; new thoughts can only be attached to past experiences or to old thoughts.

Teaching, which does not begin at the student's present knowledge, or at the point where his past experiences have taken him, is not only wrong for that subject but it dulls their mind for others. It is hard to teach the human mind to run in false channels. It is only after a number of facts and experiences have been acquired in a subject that judgments can be arrived at.

Judgment and reason are mental faculties acquired or developed much later than many other faculties. A boy might reason well from his past experiences as to the kind of weather for the day, but reason falsely on the choice of a crown for a given patient, because, in the one case, he had acquired a number of facts upon which he might reason, while in the other, he had neither facts nor experience. Hence all our early years are used in acquiring facts and experiences and those who interpret these facts in their own experience

are best able to come to conclusions on other sets of facts and experiences. The foundational and ancillary subjects in the dental curriculum are for the purpose of preparing the mind to arrive at correct conclusions on new sets of facts, when presented. Are these subjects taught with this thought in mind, or is the student's mind just filled up with enough stuff to pass the Department? Is the teaching in the Clinical Department, which is the culmination of the whole course, supplemental to the foundational teaching of the previous years? Does it recognize the value of a knowledge of Chemistry, Physics, Anatomy, Physiology, Histology, Materia Medica and Pathology as a means of arriving at correct conclusions in selecting filling materials, cavity foundations, dental appliances, dental drugs and diagnoses? Are dental operations performed in the Infirmary to educate the student or to get so many operations performed or for the benefit of the patient or the College? Are patients received and examined in a way that students get any experience or mental training in this important part of every dentist's life work? A careful and minute examination and study of a few well selected cases, upon which a student would be required to pass on examination, would drive home the value of a knowledge of the Dental curriculum better than the demonstration of many dental stunts.

No one here appreciates more fully than the writer, the difficulty of teaching young men a sufficient finger dexterity to make them safe operators, and yet, after spending three terms and perhaps a part of the fourth term in this essential part of dentistry, we are compelled to say to the student, though we value technical knowledge so highly, it is of no value without an ability to meet the public acceptably as an educated gentleman, and a mind able to arrive at sound conclusion on matters of Ethics, Church and State, and above all, have such knowledge and experience in matters of dentistry that proper operations will be selected and good judgment used in advising patients. It may be an achievement to make our graduates good mechanical dentists, but it is a much higher achievement to make them good dental surgeons. If our graduates must lack in something, let it not be in a knowledge of dental surgery or an appreciation of their responsibilities to the people they serve and their responsibility to the State.

PERIAPICAL INFECTIONS

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Professor of Dental Pathology, University of Pennsylvania.

Read at the Fiftieth Anniversary of the Ontario Dental Society,
Toronto, May, 1917.

(Continued from August Issue.)

The question of interpreting the Rontgengram is a very important one. We have in dealing with this subject of infection the acute alveolar abscess, with its opening through the alveolar plate and pus coming from it. We have the alveolar abscess where it burrows up along the pericementum and opens at the gingival border, and we have the apical abscess of the granuloma I have been talking about, and we have the pericemental abscess, which as you know is an infection that takes place beyond the root itself and in the alveolus close to the pericemental lining. It is my opinion that the number of pericemental abscesses is far greater than we as a profession have been able to comprehend on account of our lack of diagnostic appliances before we had the X-ray to aid us, and even since the introduction of the X-ray, which opened up to us for the first time practically the pericemental abscess, we see the pericemental abscess at a period when the infection has encroached upon the root itself and finally devitalized the tooth, or it has burrowed its way up the side of the root and produced a pyorrheal discharge that has made its diagnosis very erroneous as a rule. You have on the screen now a Rontgengram of a pericemental abscess, and I have no doubt that ninety-nine and three-quarters of us would make a mistake in the diagnosis of this infection and take this for a devitalized tooth. It is not a rare condition. I have placed this particular picture on the screen because I made that same error in diagnosis, and to call your attention to the fact that this form of infection must not be overlooked. My object in throwing the picture on the screen is to direct your attention to the fact that this form of infection exists, and from my own observation I believe that I have overlooked it in past years on numerous occasions. We have in this picture a condition of infection which is also very common, and is a combination of a pyorrheal condition with the dental granuloma. You can see the great extent of the pyorrheal infection. You see the loss of the alveolus extending half way down

the root almost, and here this imperfect root canal work giving this granuloma.

Dentists lack in attention to diagnosis. When a patient presents himself he is too anxious to get right to work. He feels that he is going to get paid for what he does with his hands, and the question of taking up any time in which he is not doing some manipulative labor for which he is to be compensated is one of the erroneous parts of dental education. Now, in every branch of the healing art we have found out, or it is a well understood fact, that it is bad policy to go ahead and to do things until you know what you are doing them for. When I was a medical student in the '70's I practiced on that basis. The patient presented himself and the doctor treated the symptoms. The up-to-date scientific physician does not do that sort of thing. He does not undertake to treat the fever that is present. He first tries to make a correct diagnosis, whether it takes a day or five days, and he recognizes the fact that if he starts in to give his patient aspirin or quinine, or some other remedy, to bring about a change in the conditions, he is going to change conditions that will interfere with a correct diagnosis. So it is important if we are going to practice dentistry with any idea of having any scientific value that we learn to understand our case before we begin to treat it. Over and over again I have had cases of pyorrhea brought to me for advice or consultation, and I have found that in over 75 per cent. of them I can trace the real source of infection to some apical infection, due to imperfect dentistry, which has by virtue of its toxemic conditions added to the abscessed condition the pyorrheal condition. A patient presents himself to the dentist and he sees pus flowing from the gingiva and treats it as a pyorrheal condition. I have seen pericemental abscesses treated as pyorrhea over and over in that condition where they finally succeeded in devitalizing the pulps of teeth that should never have been devitalized. Here is the first lower molar of a man six feet tall, in the finest condition of health, who tried to have his teeth saved. The dentist frankly told him that he was very sorry, but he left behind a part of his broach instead of removing it. He frankly told his patient that fact, and that he was sorry he had to have the tooth extracted. Well, this particular man came all the way from Pittsburgh to me and wanted to know whether there was any way of saving that tooth. It made no difference to him financially or any other way. I told him I was sorry, but I would have to agree with the opinion of

his dentist in Pittsburgh that that tooth would have to be removed, for I knew of no way of handling a tooth of that kind up to the present time. A young woman was sent to me, all the way from Maine, for pyorrhea. She had been treated for a year or more for that, and a picture at once disclosed the fact that the poor young woman was suffering from nothing more or less than alveolar abscesses at the ends of the teeth. Now, these mistakes in diagnosis are things that should not occur, since we have the X-ray at our command. I do not mean to say for one instant that the X-ray by itself enables us to make an absolute diagnosis, but it has a value in a case of this kind that I would estimate at about 80 per cent., but the time has come when the dentist who treats teeth with diseased conditions cannot treat those teeth properly unless the X-ray is at his command, and by that he can only get the best results if he has it installed right alongside of him. Over and over I find it necessary to get a correct Rontgengram in the middle of my work without removing the rubber dam.

This picture shows another case of a similar type. This is a picture taken from a man's mouth who was treated for pyorrhea for 25 years, and the man never had pyorrhea. Originally he fell out of an apple tree, and this canine was traumatically devitalized, and this shows the character of the root filling that was inserted at that time, and as a result of the infection that followed we got devitalization of these teeth, and when he came to me he had a little gold band put over the incisor to prevent it falling out of the jaw. It just held it in position there, and the man had absolutely not the faintest symptom of pyorrhea, but he had been treated for 25 years as a pyorrheal patient.

It makes no difference, after the pulp has been removed from a tooth, whether the tooth filling goes to this point or that point as long as the little opening at the apex is left unfilled, because we know that the streptococci come travelling along in quest for food, and if the tooth is devitalized, whatever microscopic portions or organic matter there may be, even at an insignificant point of that kind that with the naked eye in looking at the teeth you would not see, would yet be meat for such streptococci. In other words, your filling material must close that from the outside. The pericementum goes to the edge of the opening, and we must have something to take the place of that pericementum over the opening, and that is what the root filling does. We use gutta percha for that pur-

pose, because it is less antagonistic to the human structure than any substance that has yet been discovered. The human structure does not rebel at the gutta percha. The only point is to be sure that it is absolutely aseptic, and we use it, as I have said, as an insulating material.

It is the mechanical pericementum which makes it possible for that root to resist the attack of micro-organisms and from the destructive effects of osteoclasts. If I can succeed in having you appreciate the necessity for that point all that I have to say to you to-morrow about the technique, and what I will portray on the screen will be very clear to you, because that is one thing that the teachers of this subject have overlooked. They have overlooked the fact that the cementum and the dentine cannot be exposed without destruction following. They have overlooked the fact that the pulp vessels, that the pulp with its vessels as it enters the foramen is covered with a sheath, and that that takes the place of the pericementum, and consequently there is no exposure there. They have overlooked the fact that when such a tooth is devitalized we have instead of a living tissue, gutta percha, which takes the place of the pericemental covering—we have lost it. The orifice may be small, but we must stop to consider we are combatting a foe that is invisible to the human eye. We know that when we extract a tooth and examine the end of the root with a magnifying glass we are frequently surprised at the number of foramen that the magnifying glass shows up that are invisible to the naked eye. Now, that is the point, and all that is overlooked, I claim, because it makes no difference to me as far as the preservation of that tooth is concerned, a tooth that is going to be subject to osteoplastic destruction is going to be destroyed just as effectively, and when immunity ceases in that individual the infective proposition becomes very much increased. In some directions in regard to this subject of the handling of devitalized teeth we have a tremendous amount of laboratory work still to do to study the different kinds of diseases that attack the pulp. Now, I esteem my good friend Professor Orton very highly, and I agree with him in a very large measure on a great many subjects, but as a matter of principle in the large majority of cases I am opposed to the placing of crowns over vital pulps, because of the diseased condition of the pulp that invariably follows, according to my experience.

There are pulps which remain vital and yet become diseased. Here you have a microscopic enlarge-

ment of a pulp removed in a vital state, but filled with disease, pathological and histological evidence of disease in every shape, and such a form of pathogenic condition outside of the teeth we classify as of a very dangerous type. We have the pulp passing on to a condition of calcific degeneration under such restorations where caps are put over vital teeth. We have this form of disease, because it is a disease, where the nutritive action that goes to the pulp for the formation of dentine is turned aside and forms and builds up calcific islands in the pulp itself, and in some cases partly fills the whole root canal. As a clinical factor we are better acquainted with this calcific degeneration than we are with any other diseased condition. I will take up that subject later, but what I want to say is that we have become acquainted with this calcific degeneration—we are acquainted with it because we could not avoid observing it when we try to remove such a pulp. But the whole point that should strike us professionally from a clinical standpoint is that the heart of the tooth is in its pulp, and every time a tooth is injured, every time an indentation is made on that tooth in any way, it is felt in the pulp of the tooth in some way, whether by a diversion of the nutrition of the pulp to such an extent, and thus producing calcification, or whether it produces any such tumorous condition of the pulp as I have mentioned.

Now, I will revert to this subject a little later. I spoke to you before, when I had that gold shell crown on the screen this morning, of a case of that kind of a man dying in eleven years. You see the peculiar nature of the granuloma on the lower bicuspid. I knew him socially for some years, although he was not a patient of mine. We were members of the same whist club. He was a young fellow of about 34 or 35, as fine a specimen of manhood as you would want to see. In my vacation I ran into him in the club room and I expressed my surprise that he was looking quite poorly. He said: "Yes, I have been getting steadily worse month after month, and I am going away on an extended holiday." As we talked together, watching him closely, my clinical intuition seemed to give me the fact that this man was suffering from oral sepsis, pure and simple, and I asked him to step in to see me on the following morning. I said "I might be of some help to you." I made a Rontgengram of his mouth, and this was the only thing I found wrong. I said to him: "You have got a very bad infection at the end of that lower bicuspid. How long has that cap been in place?" He said: "Eleven years."

“Well,” I said, “it is long enough to have affected your heart.” He said: “I know my heart is affected,” and he mentioned a very prominent doctor in New York who had told him he had endocarditis five years ago. Now, this is where the weakness of the physician comes in. He gave him general directions to take care of himself, but never did the slightest thing to find out what should cause or produce endocarditis. In other words, he failed to follow up the etiology of the subject. Of course, I realized in a moment what he was up against, and I said to him: “Well, I would advise you to have that tooth removed at once, because I don’t think you ought to wait 24 hours to get rid of the poison that is at the end of that tooth.” I said, “I cannot do that. I am not going to have you come down here and then have your family say I brought you in here to make a patient of you.” So I gave him a letter to the president of the New York Academy of Medicine, asking him to send him to his dentist, and I received a letter afterwards that that dentist had taken off this cap and wrote to Dr. James that he could not confirm my diagnosis; that there was no pus present at the end of that root, although the root was not filled, bringing out what I said this morning: that men seem to think they must find pus to get an infection. I was very much troubled about the young man, fearing that it was too late to do anything then from the general condition that he was in, but I persistently wrote to him to have the tooth out. It ran along, and he was getting worse, and finally Dr. James took the matter in his own hands, and he took the man down and had the tooth out. He had a culture made, and they found a pure culture of streptococcus veridans, as I told them they would, and at the end of February his blood was full of streptococcus, and he died about the 1st of March. I am giving you the history of that particular case, that can only be traced directly to the placing of that gold cap over that bicuspid. When I saw him and showed him the picture, he said to me: “Why, I have never had a moment’s discomfort in that tooth from the time it was put in.” Then in contra illustration to a case of that kind I want to give you a little clinical history of the case which this next picture represents. This is a Rontgengram taken from a young girl of about the age of 19. She had been my patient for about eleven years, and had kept her mouth in the most beautiful state, as far as prophylaxis is concerned, and here you see the granuloma at the periapical region of the second bicuspid. Now, that bicuspid did not have a blemish. There wasn’t a cavity there: there

wasn't a defect about it. I discovered it in this way: This young woman went to Italy, and on the way over in a bad storm she was thrown out of her berth and her head was terribly bruised. She got to Italy, and within three weeks her knee commenced to swell. She remained in Italy for a year and a half, and shortly after the swelling of the knee she had to use crutches, and had to go around on crutches during all of that time. Now, what happened was that we had a traumatic devitalization of that tooth when she was thrown out of her berth. There was no suspicion of any dental injury at all—either by the patient or by anyone else. She came back to New York, and I was anxious to see her, but her mother told me that she was so much taken up in taking the young lady to the specialist, who was treating her for arthritis, that she didn't know when I would be able to see her. It was four or five months after she returned that I had a call on the phone one day from her telling me that she felt something bothering her that morning in one of her teeth, and wanted me to see her. She came into the office, and she smilingly said that she very likely came in without any real necessity, because she only felt this for a few minutes, and since then she had felt nothing, and pointed to the region over this bicuspid where she felt a little irritation. I took this picture, and I realized then that it was a very fortunate thing she had come. Now, I opened into the pulp chamber through the crown and found it filled with a reddish fluid. I might say I opened it under the strictest aseptic precautions, and I withdrew a part of that fluid, and I sent it over to the Rockefeller Institute. The next is a photograph of the slide that shows the chain of streptococcus veridans that we found in that reddish-brownish fluid. There was no pus present; just the degeneration of the pulp, which had reached that stage where it was slightly fluid, and where it was productive of the toxins that produced the arthritis. I filled the root canal of that tooth about ten days after, and the next picture will show the completed root filling. You see the filling protruding slightly, but absolutely closing the foramen from the periapical entrance. Two weeks after this root filling was inserted she threw away her crutches. This is a matter of five years ago when she threw away her crutches, and she later married a young Italian lawyer whom she met on this trip, and she is living in Italy. She is a Red Cross nurse over there now, working with her husband in this war, and she has never had a return of arthritis from the moment that she threw her crutches away. Her physician who was treating

her in New York City, a prominent specialist, visited me, and he said: "Rhein, I know that you cured Agnes of that arthritis, but I don't know how you did it, and I can't understand it." About a year and a half later, one morning he called me up on the phone and he said: "I suppose you will be surprised to hear what I am going to say, but my education has been extended to such an extent that I finally understand pathologically exactly what you did for Agnes, and while you did explain it to me properly a year and a half ago, I could not comprehend it. I simply want you to understand now that I have got up to the point where I understand the matter properly, and I want to compliment you on what you did in that particular case." I thought it was both a splendid and unusual attitude for a physician to take, but the main point in this whole thing is that we are in a constant growth and development in regard to the knowledge of disease and how it attacks the human body. There may be errors that I have worked into this subject that I am not acquainted with to-day that I may be willing to withdraw to-morrow when I find them out.

Now, I am going to get down to the principles that we should bear in mind if we are going to produce the results that I say we must, and I want to repeat again and again the necessity for the removal of every particle of pulp tissue, the eradication of every particle of diseased tissue, the sealing at the periapical points of the root filling, as well as the absolute filling of the canal itself. The great point in being able to reach to the end of every root canal is to know how to do it, and the greatest aid we have in that respect is the X-ray. With the X-ray at our command we have displayed before us the picture of the anatomy of the roots without extracting the teeth. We can see the portions of that root without having first extracted it, and the variations in the pulp ramifications, as was so graphically portrayed by Professor Orton this morning. We have all seen the pictures and the specimens of curved roots portrayed to show the impossibility of getting to the ends of such roots. Now, I distinctly state there is a proportion of teeth that we cannot succeed with, but I want to say to you that the majority of those curved roots can be straightened out—the curves can be straightened out. That is the least difficulty of the difficulty. It does not begin to compare with the difficulty of overcoming the removal of these diverse ramifications of pulp tissue.

Now, when I say straightened out I mean if you study the curvature of a root and draw a line, a straight line, from the

end of the root, you will reach a point where you leave the root, and if you can enter the root at that point you have no curvature. That is what I mean by straightening out a curved root. While it is not always possible, it is possible in a great many cases, as I will show you as we go along, and in some of them sufficiently to overcome slight curvature, but the important thing that we must understand at the outset is that we are attempting to leave in the jaws of the people roots of teeth free from infection and in such a condition that reinfection is impossible. Consequently that is our primary and only point, and to accomplish that all other things must be sacrificed. The greatest difficulty in the way of acquiring a correct root technique is the inherited tendency of dentists to preserve every particle of the crown of the tooth, and that must be eradicated from your mind if you want to do this work properly. All specialists in every field of medicine have a failing in the conservation of tissue in their particular field of action. When you come, however, to the surgeon of eminence who has made a reputation for himself he has only one point in view, the maintenance of life and the restoration of that individual to health. You never see a man like that making a little pin hole into a man's guts. No, he opens up his field of action. Why? He wants to see everything. He wants to get at the bottom of the trouble and remove it. Now, that is the great fault with us dentists. We value too highly the crown of the tooth. Now, I do not want you to think that I do not value the conservation of tooth structure in dealing with vital and healthy pulps. I value it as highly as anyone, but when once the pulp is devitalized, then we should pay no attention any more to that crown if it is going to interfere in the slightest degree with our reaching the ends of each separate root canal. Consequently we must abandon the idea of small openings into pulps. We must open into the tooth where we are able to save the crown in a broad and liberal manner, using our Rontgengram as a guide, and taking into consideration that we are looking for a straight line from the point of opening to the end of a given root, or given roots in a multiple rooted tooth, and if it is necessary to cut off the crown of the tooth cut it off at the start. Heaven knows it is going to take time enough to do any individual root operation properly, and don't waste time cutting away a crown bit by bit. You can study your tooth from your Rontgengram sufficiently to determine if it is going to be a difficult case of entry and if there is any chance of saving that crown to make it of any efficient use or if it is going to be still a shell when you

get through. If so, cut the crown off at once, because you not only save time there, but you frequently save hours of time in the comparatively great ease in getting to the end of those roots. It is for that reason that we must study the anatomy of the roots, and I have here on the screen a diagram of an upper first bicuspid. Over and over I have had people come to me with a hole drilled right between the roots, a nice little pinhole drilled in to take the pulp out of the first bicuspid. In other words, you must open up your buccal canal and your lingual canal in the manner shown before. Now, of course, you have to study the type of the tooth you are working on. I do not know of anything that is more difficult in root canal work than the mesial buccal root. Here is shown a typical cross-section showing how it approaches close to the mesial line, and that is underdrawn in that respect from my point of view because it is much nearer the mesial border, three times nearer in the average case, than the disto buccal opening. Here we have the lower molar shown where we have practically the same difficulties to contend with as in the upper molar, showing the curvature we have to overcome. Sometimes that curvature is not present and sometimes it is five times as much as that, and what use is there to make a pinhole or any kind of an opening like that and expect to get down to the end. In the next picture we have a little diagram of such a curvature and the little lines I have drawn, which explain themselves. In a tooth with very little curvature that pulp can be removed without interfering with the crown, but frequently to make the opening you have to cut the whole crown off. I have saved teeth of that kind where I have had to enter just a little below the gum line, where I have had to push the gum back in order to be able to get a straight line on account of the terrific curvature of the mesial root. It is impossible to simply say, as I have had men say, "Well, I can go around those curves. I have got a broach that will bend all around those curves, and you may not be as skilful as I am." I have had young dentists tell me that, that they could do this thing without cutting off all the tooth that I have. I will show you one of the results in a few moments, but the point is this, we do not try to make those curves in a straight line simply to remove the pulp. I never thought at one time it was necessary for me to say that I had broaches by which I could travel around this curve and I could get the pulp out of that tooth. I can get the pulp out of many of those teeth around curves, but that is only half of the operation. We straighten those canals

out because all of our pulp removal is valueless unless we can fill the canal. Remember what I said in commencing that the third consideration was that the root canal must be effectively and homogeneously filled from beginning to end. The filling must seal or incapsulate the end of the root. So we clean out the canal bearing in mind that it must be filled. Forcing a stream of porous gutta percha through a canal, through a tortuous one, does not fill it. Chloroform is of great value in putting in gutta percha fillings, but it is evanescent, it volatilizes immediately. We want a solid compaction filling, and those canals must be made in such a condition that such a filling can be left there, and that is the reason we cannot use curved instruments, and that is the reason why many of my young friends have been mistaken in thinking they could do these things. Now, feeling that I have impressed upon you sufficiently that you must be liberal in your cutting, that you must not stop at the destruction of tooth crowns, because of what avail is it to restore in the most beautiful way the crown of a tooth that is diseased at the end and liable to produce arthritis or heart disease?

Now, I have put upon the screen a few pictures of some of the instruments that I use. As a rule I am opposed to advertising different things, but I feel you want to know just how I go about this thing myself. (Hear, hear.) Having opened up the pulp chamber, the thing I now do is to get rid of the pulp contents, and the important thing is to get rid of it as much as possible by instrumentation, if that can be done, because if it can be done by instrumentation the structure is left in a more secure condition and it can be done more rapidly. Where we fear we have a distinctively straight line, as for instance a canine, that we are going to put a crown on I never hesitate to take a reamer in my engine and drill straight for the goal. I use for the removal of pulps the broaches that are made by the 20th Century Broach Company, because I think they are better than any others I have been able to get. They are made in Cleveland, I believe. The barbs are not at a right angle, but they are turned back in such a way that they grasp the pulp tissue far better than the right angle broach. I do not know at the present moment of ever breaking one of these broaches, and I wish I could say the same of others. As far as possible I remove the pulp tissue with a barbed broach, using as fine a one as possible, bearing in mind if I have or have not a straight canal. There is all the difference in the world between taking the pulp out of a straight canine and the first

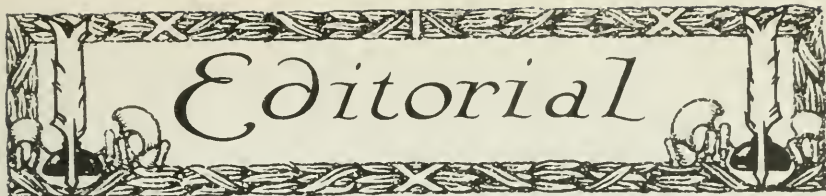
bicuspid such as I showed you a moment ago. I never think of running a reamer up into canals of teeth of that kind, because the one thing that I am trying to bear in mind is to avoid clogging any canal that is at all tortuous. I do not want to get dentine blocked in a canal of that kind, so if I am working any kind of canal that really gives me trouble—and I do not have to talk to you really about straight canals because we all can handle those—I start in after I have removed the pulp tissue as thoroughly as I can with a broach of the same make that they call an apexograph that was devised by Dr. Gillette with just a single barb at the end of it.

This apexograph has just one little barb and is made in a very fine gauge, and the object is to traverse that canal as far as possible and to open it up as gradually as possible without any clogging. I use for that purpose on the apexograph the slightest particle of sodium potassium. A mixture of that was introduced in 1893 and its virtue consists in the fact of its great affinity for water. When sodium potassium comes in contact with H_2O_2 there is an immediate marriage. They join together with such great intensity that when the combination is complete they are both destroyed. Oxidation so violently takes place that there is nothing left of the given quantity of tissue that has any moisture in it and the given quantity of sodium potassium except a particle of charcoal that will be left, and that is practically the way in which this substance finds its way little by little through the foramen of the most tortuous canal, by virtue of its affinity for H_2O_2 in the slightest particle of organic tissue that it comes in contact with. So at the end of the apexograph we have a little speck of sodium potassium, no bigger than the head of a pin, and that finds its way down through the canal. We do not try to ream a canal rapidly. We only use the reamer after we have once reached the end of the canal. I say *after* we have reached the end of the canal. In a certain type of teeth where a person has reached an advanced age, at the very end of the root the hardening of the dentine has increased to such an extent that what is left of the organic mass is almost microscopic, and when we get right to that last point and we are not able to work through easily with the apexograph and the little sodium potassium, a reamer of this kind will frequently, with the assistance of the sodium potassium and the apexograph, complete our opening through the foramen. The next picture shows some of the other instruments that I make use of. I want to call your attention first to this Fisher bur for the

right angle hand piece. You notice that the Fisher bur is about three times the length of the ordinary right angle Fisher bur. The value of the Gates Glidden reamer consists in its flexibility. It is the one instrument I use with impunity, that I give no heed to, because I know when they break they never break towards the end. If I want to enlarge a canal I use a Fisher bur of that kind from the smallest size up, because I can enlarge the canal in a straight line far better than with any means of that kind. Where you are trying to save the crown of a lower molar or an upper molar and you feel that you have to go away over to the mesial buccal angle on the lower molar or the mesial buccal angle on the upper molar, that bur in the right angle hand puts you within that mesial wall in a straight line away down, using it just as you would in preparing a cavity for an inlay. You can use a bur of that length within mesial wall and get it to the thinness of tissue paper without any difficulty, and that is what I designed it for. There are lots of these teeth where I save the crowns, but I make up my mind as a rule at the outset. I do not wait to take it off after I have wasted a few unnecessary hours trying to keep it there. So we use those instruments for opening up the starting points of canals.

Now, as we run along in the canals of some of these molars we find what? Here we have a section of a pulp with calcific degeneration, a section of pulp possibly where it is almost calcified. This is the kind of pulp that the dentist will frequently say cannot be removed because it is absolutely calcified. Now, a microscopic examination disproves that fact. The white part you see in the canal is the calcified part, and all that dark material on the side running through those strata are the remnants of organic tissue that is left there.

(To be concluded.)



Editorial

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VOL. XXX.

TORONTO, JANUARY 15, 1918.

No 1.

MATRICULATION EXAMINATIONS

During the Christmas holidays each year there is a conference of the representatives of the Ontario universities to consider the subject of matriculation to the universities of the province. This is not a legislative body, but a deliberative body. It has no power within itself to implement its opinions, but, on the other hand, it influences very largely the opinions of the Senates of the universities represented. It also has an influence with the Matriculation Board, because many of the members of the conference are members of the Matriculation Board. A year ago the subject of compulsory Latin as a matriculation subject was discussed at some length. It is remarkable that such a conference should even permit the discussion of Latin as a compulsory subject for matriculation. In Great Britain Latin has not been a compulsory subject for the degree of B.A. or admission to the study of dentistry or medicine for some years.

The conference just held had several important subjects up for discussion, among them the making of French a compulsory subject for matriculation. The real discussion arose out of the introduction of Spanish as an optional subject.

The importance of Spanish is gaining ground very rapidly in North America because of the large business relations with Central and South America. In the United States there are far more students taking Spanish now than at any time in the past. In Canada the number of students taking Spanish has increased four-fold in one year. After a debate of fully an hour it was decided that a committee should approach the Department of Education and express to it the desire of the universities to have Spanish taught in the preparatory schools, and afterwards more fully taught in the universities.

Another subject of vital importance to the dental profession was that of the regulation accepting partial matriculation of enlisted students in lieu of full matriculation. This has already been in operation in several of the faculties, especially dentistry. If the suggestion of the conference should go through, dental students who have a special matriculation may transfer that standing to any other department of the university.

What follows was agreed upon:

That a student who prior to enlistment held a certificate of partial matriculation issued by the University Matriculation Board, be accepted as having fulfilled the requirements of the University of Toronto, Queen's University, the Western University, and the College of Physicians and Surgeons of Ontario, for admission to the study of medicine.

Further, that the same principle apply to the matriculation examination for entrance to the Faculty of Medicine of McGill University.

NOTE.—A certificate of partial matriculation is defined as one issued by the University Matriculation Board to a student who has obtained forty per cent. on each paper, with an average of sixty per cent. on at least eight of the twelve papers necessary for pass junior matriculation.

That the subjects for pass matriculation be: Latin, English, History, Mathematics, and any two of the following: Greek, French, German, Experimental Science.

Among the New Year's honors bestowed upon distinguished Canadians is the name of Dr. Fred Coughlin, Guelph, Ont. Dr. Coughlin resigned the Secretary-Treasurership of the Canadian Dental Association when he joined the artillery to go overseas in 1915.

THE CANADIAN ARMY DENTAL CORPS PERMANENTLY ESTABLISHED

In a recent issue of the DOMINION DENTAL JOURNAL appeared an editorial which stated that the Canadian Army Dental Corps was on a war establishment only. In other words, as soon as the war closed, the dental corps would come to an end. Thanks to Union Government, General Mewburn, and the energies of some of the dental officers and the profession, a general order was passed making the establishment permanent. The Canadian profession has just cause for pride in the standing given it by the new order. The appended establishment is for Canada, and has nothing to do with the overseas establishment:

ESTABLISHMENT.

G.O. 101, 1917, CANADIAN ARMY DENTAL CORPS, C.E.F., IN
CANADA.

Headquarters.

Lieut.-Colonel (Director Dental Services).	1
Hon. Captain and Quartermaster	1
Staff Sergeant	1
Orderly Room Sergeants	2
Quartermaster Sergeants	1
Corporal	1

Military Districts.

Lieut.-Colonels	6
Majors	12
Captains (Military Districts Nos. 1-13)...	76
Lieutenants (Military Districts Nos. 1-13).	39
Honorary Lieutenants (Military Districts Nos. 1-13)	10
Sergeant Major	1
Quartermaster Sergeants	10
Mechanical Sergeants	121
Corporals	10
Privates	123

Appointments to Units.

One Dental Surgeon to every 500 men in the District, and one or more Dental Surgeons, as circumstances may require, is to be attached to District Staff, and whose services are to be utilized in connection with Units whose numbers do

not reach the requisite number to permit of a Dental Surgeon being appointed to them.

Convalescent Homes.

One Dental Surgeon to every 150 beds.

Military Hospitals.

One Dental Surgeon to every 500 beds (with Mechanical Sergeant and Privates).

NOTE.—Dental Surgeons who have practised their profession for two years or more are to be appointed with the rank of Captain; those under two years, with the rank of Lieutenant.

Lieutenants who have been in the Corps for one year may be promoted to the rank of Captain.

Dental Surgeons for Convalescent Homes will be exclusive of establishment provided above.

(H.Q. 3361-1-4, VOL. 2.)

ATTACHMENT AND ABSORPTION OF RE-PLANTED TEETH

Capt F. C. Wilkinson, M.D., B.D.S., Liverpool, writing in the British Dental Journal, says that much erroneous teaching has been given on this subject. It has been believed that the periodontal membrane must be preserved to have any success in the operation. Dr. Wilkinson was unable to make out any difference in retention or under the microscope, whether the membrane is left on the root or removed before implantation. Two teeth were extracted from a monkey, the membrane was scraped from one and kept intact on the other. Both were replanted after five days. In fifty-one days the monkey was killed and sections made from the teeth and the adjoining parts. Irregular absorption had begun. In some parts the bone was built into the cementum, where absorption had taken place. This the author calls bony attachment. In other places there are fibres, resembling periodontal fibres butting against the cementum, but in no case is there actual attachment or building of cementum around these fibre-ends. The most important part of the attachment is ordinary connective tissue cells (scar tissue).

Dr. Wilkinson does not attempt to explain why absorption is rapid and complete in a much shorter time in some cases than others, but he does suggest that asepsis likely has something to do with it. The fact that no absorption takes place where the fibres resembling normal periodontal tissues are found is interesting and should be further investigated.

MAJOR W. D. COWAN, D.D.S., M.P. MAYOR OF REGINA

At the general elections for the Dominion House of Commons, Major W. D. Cowan, D.D.S., Mayor of Regina, was elected with over five thousand of a majority. The Dominion Dental Journal feels a distinct pride in Dr. Cowan's election, because he has been one of its many distinguished associate editors for almost twenty years. The profession of dentistry has been represented only once before in the Federal arena. Many dentists have gained distinction in educational, municipal and provincial public life, but few have attempted the larger field. Dr. Cowan goes to Ottawa with a freshness of mind and an alertness which will soon bring recognition. His long and varied experience in public life will make his opinion of value in a variety of departments.

Dr. Cowan was born in Guelph, Ontario, 1865. Was educated in the public and high schools of that city. After leaving school he tried farming for two years and in the next three years learned carpentering. Gave up carpentering for the study of dentistry in the Baltimore College of Dental Surgery, from which institution he graduated in 1889. Began practice in Mount Morris, New York State, but had the good fortune to be burned out, which drove him back to Canada. Was married to Miss Minnie McCarten, Toronto, 1890. Moved to Regina the same year and has there remained. Dr. Cowan's diversified public service can hardly be equalled. There were only about a dozen dentists west of Winnipeg and no dental law when Dr. Cowan arrived in Regina. He proceeded to get them together, holding their first meeting in his office. Was elected first president of the new society, a position he has held for over twenty-four years.

It was not always easy sailing in dental legislation in Saskatchewan. There were many law suits and much hard fighting to get dental laws through the legislature. At one time things got so warm that the legislature dismissed the Board and called a new election by mailed ballot, when the votes were counted, Dr. Cowan was again elected president. There were only two votes against him in the election.

When the dental society of Western Canada was formed in Winnipeg Dr. Cowan was elected vice-president, a position held for many years. Along with the late Hon. S. W. McInnis, of Brandon, Man., Dr. Cowan did pioneer work in or-

ganizing the Dominion Dental Council of Canada. Ever since the organization of this body Dr. Cowan has been its Secretary-Treasurer. In 1910 he was elected president of the Canadian Dental Association, presiding at the meeting held in Hamilton, 1912.

Dr. Cowan has a marvelous capacity for work; besides conducting a dental practice, directing so many dental officers, he had time for public service to his city and province in many ways. Was elected to the council of the town of Regina, 1891, but defeated the following year. Re-elected to the council of the city of Regina, 1907, but was defeated for Mayor the following year by seven votes. Was president of the provincial Conservative Association for several years. Organized the Young Men's Christian Association and acted as its president for four years. Edited the Regina West for four years and the Indian Head Vidette for five years. In 1911 was defeated in the Federal elections by Premier Martin. Was elected Mayor of Regina by acclamation, 1915, and again 1916. During this time was chairman of the Police Commission. He is a member of the Board of Governors of the Regina General Hospital, member of the Library Board, the Bureau of Public Welfare, and other organizations. Has been president of the St. John's Ambulance Association for Saskatchewan for four years.

When Military District No. 12 was formed from No. 10, the O. C. of the district asked Dr. Cowan to organize the Dental Corps. He held the position of A.D.D.S., M.D., No. 12, until he resigned to run as a candidate in the interests of Union Government.

As president of the Territorial Lacrosse Association Dr. Cowan did much to build up sports in Western Canada. For several years he was president of A.O.U.W., having jurisdiction over the three western provinces.

There are few men in public life to-day who have had more experience in public service than the genial, painstaking, straight-forward, energetic member of the House of Commons for Regina. The dental profession is proud of his service and will look with some interest to his achievements in the broader area of public service.

The makers of artificial limbs have learned what dentists have known for centuries. Artificial limbs cannot be made permanent. No more than artificial teeth.

Editorial Notes

"Dentistry in the Bible and Talmud" is the title of a small volume which not only gives the location of references to the teeth, but a comment on the meaning of the references.



The University of Toronto has issued A Roll of Service. The volume is very informing. It gives the name, the home, and military address together with rank and casualties for all graduates and undergraduates in the service.



The public in Alberta are awakening to the idea that public health should be under the direction of a separate minister. The late Hon. Dr. Willoby, of Ontario, had hoped that such a department would be established in Ontario. This subject is being seriously discussed in England. The Canadian dental profession should assist in the promotion of public health.



The University of Toronto has established research in dental science under the direction of a special committee appointed by the Board of Governors of the University and the Canadian Oral Prophylactic Association. The President, Sir Robert Falconer, is chairman, and the Dean of the Royal College of Dental Surgeons, Dr. A. E. Webster, is secretary.



Dr. P. J. Blight, Liverpool Hospital, England, reports a case of bismuth poisoning from a paste of bismuth, iodoform and paraffin, used as a dressing. The chief symptom was a blue line around the gums. Many times a much more severe type of bismuth poisoning occurs from injections of bismuth paste in large cavities or sinuses. In some of these cases the gums not only become dark or sore, but all the mucous membranes become totally black.



In Melbourne, Australia, a patient died under chloroform, which was administered for extracting teeth. Twelve teeth were extracted. A local dentist wrote the Premier asking that a bill be passed prohibiting the use of chloroform as an anaesthetic for extracting teeth. The medical profession opposed any restrictions being placed upon the medical profession. It is a remarkable thing that so many dentists con-

tinued to advise chloroform as a general anaesthetic for extracting. Chloroform has a bad history in such cases. And should be discontinued. Few dentists and fewer physicians look upon the extraction of several teeth as a major operation. Shock may have much to do with many deaths where chloroform is administered.



An editorial in the New York Medical Journal casts some doubt on a medical cult which claims its reason for existence on the cures it has made. There are more fads in medicine than in styles of women's hats. Dowie was said to have cured over 100,000 patients. Mesmer cured thousands by an electric appliance. Those who are cured tell others, and thus the curing goes on. The methods of curing of one generation always seem foolish to succeeding generations. The regular medical practitioner in an essay on treatment fortifies his methods by an array of cured cases. His method is no different from the quack in this regard. Dental essayists have the same habit except that they show X rays as proof, when as a matter of fact the evidence is not always discernible in the pictures.

Further details of the scheme outlined for training disabled soldiers in dental mechanics have been reported by the Advisory Committee for the Ministry of Labor. In certain areas schools would be started for training disabled men as dental mechanics, but elsewhere arrangements would be made with private dentists. A man being trained at a school would receive from Government 27s. 6d. per week during the whole twelve months period of training, after which it was hoped he would get employment. If a man was being trained by a private dentist the Government would pay 27s. 6d. per week for the first six months, with certain allowances for children; this weekly sum would be reduced by 10s. during the next three months, and by 15s. during the last three months, these deductions being made good by the dentist responsible for the training. Mr. Leonard Matheson, as representing the views of the Central Advisory Committee, said that they hoped they would be able to inaugurate proper training for dental mechanics, which would be a valuable contribution to reconstruction after the war, and also prove of real service to the profession.—*Dental Record, London.*

Dominion Dental Journal

VOL. XXX. TORONTO, FEBRUARY 15, 1918. No. 2.

Original Communications

X-RAYS

PROF. GEO. R. ANDERSON, B.A.Sc., M.A., Toronto, Ont.

Read before the Odontological Club, Toronto.

Towards the close of the nineteenth century it might have appeared to the casual observer that a somewhat settled condition of things in the realm of physics had been reached. It was frequently stated by scientific men that future results might be looked for only beyond the fourth place of decimals; theories of the constitution of matter and of the nature of energy were more or less firmly established, to wit: *the atom* was considered the ultimate indivisible entity of the universe, and had held this position for a century, light and radiant heat were considered to be wave motion of the ether, the laws of electric attraction and repulsion and conduction were very well understood, and so on.

In the light of subsequent events it is perhaps fairly easy now to recognize certain mysterious phenomena that were not readily explainable by the settled theories of matter and energy, and which pointed to the coming revolution.

In particular, the phenomena of discharge of electricity through gases at low pressure presented certain phenomena that defied explanation, and the English physicist Crookes was forced to the suggestion of a "fourth state of matter," which had properties differing from the ordinary states of solid, liquid and gaseous. This chance suggestion was not taken very seriously, but as subsequent events have proved, came nearer the truth than perhaps even he himself expected.

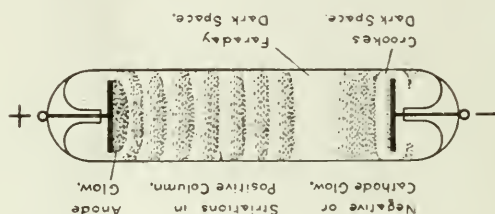
It had been known and demonstrated more than 50 years before that the discharge from a Leyden jar was oscillatory. If such discharge is oscillatory, then it must set up a wave disturbance. The recognition, investigation and measurement of these waves were accomplished by Hertz between 1885 and

1888. Electric waves have since found important application in telegraphic circuits, which to the general public seems very wonderful, although in reality the phenomenon is quite as simple, if not more so, than ordinary wire carried circuits.

Again to return to the Crookes tubes; it had long been known that when exhaustion had reached a certain stage, the walls of the tube opposite to the cathode, or negative terminal, exhibited a green fluorescence; also that a barrier set up in the tube intercepted whatever caused this fluorescence, casting a sharply defined shadow on the opposite wall. Crookes also was able to cause the rotation of a small mica windmill by means of the cathode stream.

It was while seeking an explanation of some of these mysterious happenings that Roentgen made his discovery that so startled the world, and which, in addition to the obvious application in surgery, was the starting point of a series of epoch-making discoveries that are still going on.

When a high tension current is caused to pass through a tube of rarefied gas the following phenomena appear:



At a pressure of 8 to 10 mm. there appears a long positive column of pink striae, after which there is an ill-defined space known as the Faraday dark space, then a shorter negative column, followed by a second space, the Crookes dark space. As the pressure is decreased this dark space increases, pushing the negative glow before it. When the pressure reaches the vicinity of $1/50$ mm. both positive and negative glows gradually fade out, and the tube begins to show the green fluorescence so characteristic of X-ray tubes. The reduction in pressure may be carried on until the discharge ceases to pass at all.

Cathode Rays.—Sir J. J. Thomson, in 1897-98 carefully investigated the nature of the cathode discharge. He showed that the stream could be deflected by a magnetic field, and hence inferred that it consisted of charged particles, carrying a negative charge. By arranging both an electric and mag-

netic field at right angles of known strength he was able to infer the mass, velocity and charge.

Mass of electrons $\frac{1}{1800}$ of that of H atom.

Charge is invariable and equals that carried by a H ion in electrolysis.

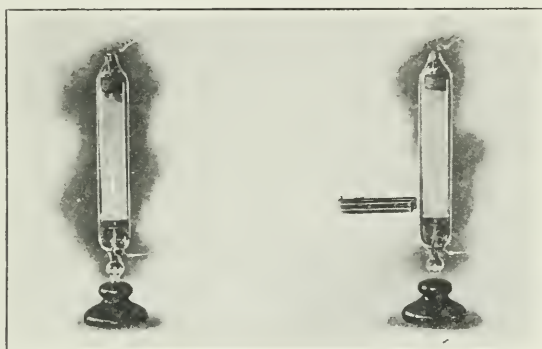
Velocity depends on the electric force applied to the tube, and varies from $1/30$ to $1/3$ that of the velocity of light.

e_m 1.77 electro-magnetic units for slowest rays.

e 1.5×10^{-20} electro-magnetic units (ionic charge).

m 8.8×10^{-28} gramme.

Mass of H atom 1.6×10^{-24} gramme (kinetic theory of gas).



Anode Rays, Positive Rays, Canal Rays.—There proceeds from the anode a stream of particles which are also capable of being deflected by a magnet, and are therefore electrically charged.

These have been investigated by methods similar to those employed in the investigation of the cathode stream. In the anode stream there are present atoms and molecules of the gases present in the tube, some charged positively, others negatively, and some neutral. The velocities of these positive particles range from 10^8 cm/sec to 2×10^8 cm/sec.

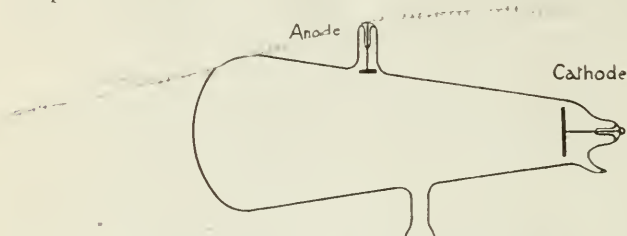
These positive rays impinge on the cathode, and by that action liberate the cathode rays, which in turn bombard the target and thereby set up the disturbance known as X-rays. These positive rays are also responsible for the positive electrification on the walls of the tube and the fluorescence.

X-rays.—The discovery of X-rays was made by Professor Roentgen in 1895 with a Crookes tube of the form indicated in the annexed figure:

Here it will be seen that the cathode stream is directed towards the broad end of the tube, and by the action on the

glass liberate the X-rays. Inasmuch as the area from which the rays are projected is large, the definition was very poor and the tube soon gave out.

The following year Professor Jackson, of King's College, adopted the concave form of cathode used by Crookes in



1874, and mounted a target opposite to it and inclined at an angle of 45°. This was a very great improvement.

The next step in the development was the addition of the separate anode, and that is the form that has remained.

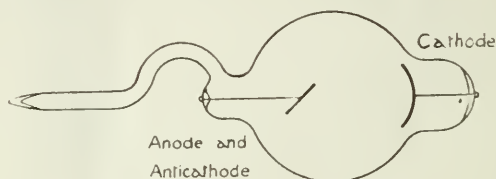
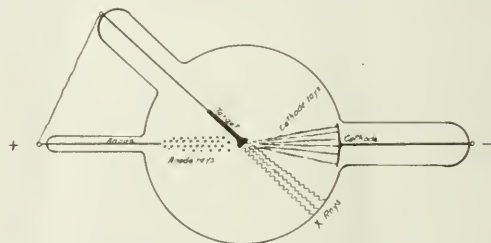


FIG. 16.—Jackson's first focus tube, employing focussed cathode rays

GENERAL TYPE OF X-RAY TUBE.

Conventionally the current is said to enter at the positive pole or *anode*, and leave by the negative pole, or *cathode*. A stream of positively charged particles proceeds from the anode towards the cathode, and by their action liberate a stream of



negatively charged particles called *electrons*. These starting at right angles to the curved face of the cathode are focussed on the target, and by their impact set up a source of X-rays, which are given out in all directions forward.

The anode is connected with the target, or anti-cathode; the utility of the separate anode is a matter of some doubt, but in

general it conduces to the smoothness of working. Its position should be outside the cathode dark space, which, by the way, is generally large enough to include the anti-cathode.

ELECTRODES.

The anode is usually made of aluminum, as that metal shows little sputtering; the cathode is also usually of aluminum and concave, so that the rays may be focussed on the target. The focal distance varies considerably with the pressure, and, furthermore, is somewhat capricious in its variations. This variation in focus results in a loss of definition, because the X-rays issue from the point of impact of the cathode rays, and if this point becomes an extended surface, then the issuing rays will no longer define sharply. If, on the other hand, the cathode stream is precisely focussed on the target the latter may be fused and so destroyed. Keeping the cathode cool diminishes the tendency of the tube to harden.

The Anti-cathode or Target.—The metal for this terminal should possess:

1. High atomic weight—to give greater output of rays.
2. High melting point—to permit of sharp focussing without melting.
3. High thermal conductivity—so that it may remain cool.
4. Low vapor pressure—to prevent sputtering.

Platinum is most generally used, but tungsten, tantalum, iridium and osmium have also been tried. There are two objections to platinum, the sputtering and high price. A cheaper device is to have a nickel target faced with platinum.

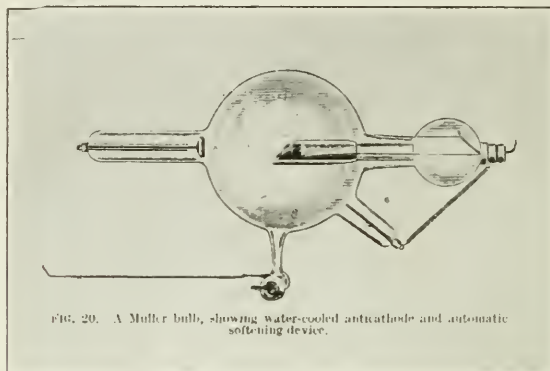
SOURCES OF CURRENT.

1. Electrostatic machines.
2. Induction coils.
3. Alternating current transformers.

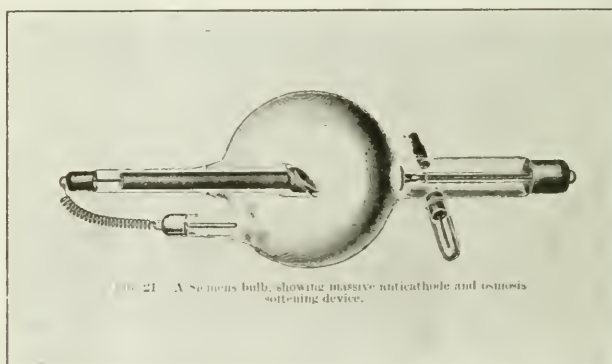
1. *Electrostatic Machines.*—These are somewhat capricious in their action, but when in good working order they give a steady and satisfactory supply of X-rays. The current is entirely uni-directional, which is a manifest advantage. The type of machine most commonly used is the Wimshurst; in this instrument the output depends on the number of plates, while changes in the voltage are effected by simply changing the angle of the brushes.

2. *Induction Coils.*—In this type of generator there are two circuits, a primary and secondary, wound co-axially on a laminated core of soft iron. The primary is connected to a source of direct current, which is rapidly made and broken; at each

interruption of the primary circuit there is a momentary current induced in the secondary, in one direction at the make, and in the opposite direction at the break. Induction coils are usually provided with a condenser consisting of sheets of thin metal, separated by paraffined paper. The function of the condenser is about as follows: When the circuit is made



the condenser is charged by the first rush of the current, this charging being *relatively* slow. When the circuit is broken this charge is *instantly* discharged through the primary circuit, demagnetizing the core and releasing the hammer, which re-makes the circuit. It is, of course, necessary to have the current only in one direction; this the condenser partly accomplishes, but not completely.



3. *A. C. Transformers.*—The transformer is similar in principle to the induction coil. An alternating current is passed through a primary circuit, resulting in an alternating current of higher potential being induced in the secondary circuit. There is, of course, no make and break arrangements, and therefore no condenser. In order that the output shall be in

one direction only, means must be taken to get rid of the reverse current, so that a rectifier becomes necessary. This is usually accomplished by a rotating pole changer running synchronously with the intake current. The resulting current,

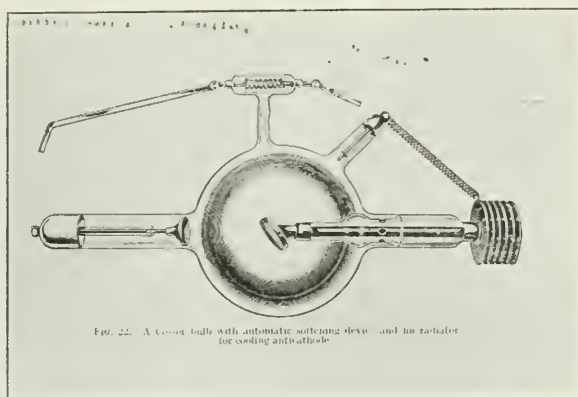


FIG. 22. A Crookes bulb with automatic softening device and in rectifier for cooling antiaethode.

although uni-directional, is, however, pulsating, rising from zero to its maximum, and back to zero again at each half cycle of the primary.

PHYSICAL PROPERTIES.

For some years after their discovery, the nature of X-rays was much disputed. The suggestion that they were a form

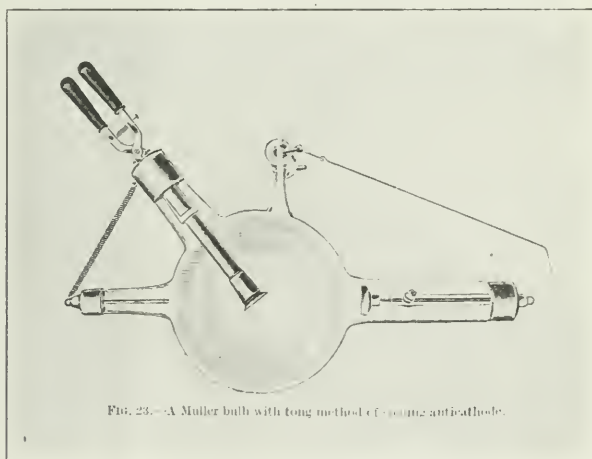


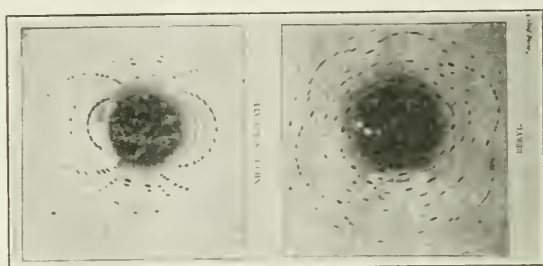
FIG. 23.—A Muller bulb with tong method of cooling antiaethode.

of light of very short wave length seemed to find most favor, but against this it was urged that they could not be satisfactorily reflected, refracted or polarized. Other investigators held to the belief that they were particles travelling at high velocity, but what the nature of these particles were could

not be stated. Clearly they were not electric, since the magnetic field was without effect on them.

A Swiss physicist, Laue, suggested that the reason why X-rays were not reflected from a surface of glass or metal was on account of their extremely short wave length as compared to the coarseness of the molecular structure of an ordinary solid. An analogy to this may be found in the attempt to reflect light from a surface of ground glass; we get what is called diffuse or scattered reflection, although if the surface be held nearly at grazing incidence a certain amount of specular reflection may be obtained.

Laue further suggested that the cleavage planes of a crystal might on account of the presumed regularity of structure offer a means of reflecting the rays. This was soon put to the test of experiment, and was immediately successful. The nature of the phenomenon differs considerably from that of the ordinary reflection of light, on account of the fact that a crystal presents a mass of atoms regularly arranged, but



spaced so far apart compared to the wave length of the rays that the result is one of diffraction and interference.

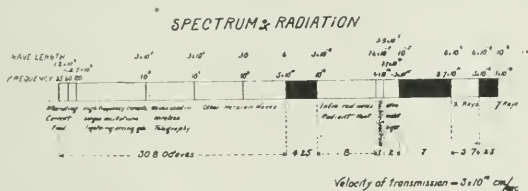
To understand the result, let us examine what takes place when light is passed through a diffraction grating. The grating consists of a number of parallel lines equally spaced on a transparent surface, and when light from a slit falls on this grating a series of spectra is produced on each side of the central beam. The line of the angle of separation is directly proportional to the wave length, and inversely proportional to the grating space, or $s \times \sin$. This gives the simplest and most accurate method of measuring wave length.

The annexed illustration shows the result of passing X-rays through two crystals and receiving them on a photographic plate; the dark central spot shows the straight line beam, while the pattern on the outside shows the rays diffracted from the planes of the crystal. Here the result is much more complex than for the surface, as we have to deal with a

solid in which the diffracting points are spaced in three dimensions, while the light grating is really spaced only in one dimension.

This method has made it possible to determine the wave length of X-rays, and has also been applied extensively by Professor Bragg to the analysis of crystal structure, thereby opening up a wide field of investigation. These results have finally settled the question as to what X-rays are, viz.: Wave motion of very high frequency and correspondingly short wave length.

It is possible now to indicate in a general way the relation of X-rays to other forms of radiant energy. Everyone is familiar with the spectrum obtained by passing light through a prism, resulting in the separation of white light into its component colors, or wave lengths. The annexed diagram shows the entire spectrum of radiant energy. It will be noticed that ordinary light occupies only about one octave out of a



total of 60. The velocity of transmission is in all cases 300,000 km/sec, or about 186,000 miles per second. It is worth noting that Maxwell more than 40 years ago identified light with electric energy in his "electro-magnetic theory of light."

DATA.

Diameter of smallest atom about $\frac{1}{300,000,000}$ inch.

The ultra microscope may detect a diam. of about $\frac{3}{1,000,000}$

Mass of electron about $\frac{1}{1,800}$ of H atom.

Diameter of electron $\frac{1}{100,000}$ of H atom.

Density of electron 5,000,000,000,000 times density of H atom.

Alpha rays atoms of helium, vel. about 1/10 light.

Beta rays, electrons with vel. nearly equal to light. These will penetrate plate of metal 1/10 inch.

Gamma rays, short waves.

Sheet of thinnest gold leaf $\frac{1}{1,000,000}$ inch.

Soap bubbles and oil films $\frac{1}{20,000,000}$ inch.

Frequency of violet light $\frac{1}{800,000,000,000,000}$ second is a small part of a second than a second is of historical time.

THE DUTY OF THE GENERAL PRACTITIONER OF DENTISTRY AND HIS LIMITATIONS IN THE PRACTICE OF ORTHODONTIA

BY GEORGE W. GRIEVE, D.D.S., Toronto, Ont.

Read before Hamilton Dental Society, Jan. 16, 1915.

It is a pleasure to have the opportunity of spending an evening with you and of discussing a subject which, for a long period, I have made a special study. Previous to entering upon the practice of orthodontia as a specialty I conducted a general practice, and have a very specific purpose in telling you this, viz.: that I hope to be able to convince you of my sincerity in the statements which I will make to-night, some of which, at least, there may be those present, perhaps, who will doubt. During eight years in the conduct of a general practice I looked upon orthodontia very much as most of you here to-night do, and during that period attempted the treatment of probably more cases of malocclusion than the average man in general practice, because, from early in my college days, I had a great liking for the work. I would have you realize that while I may look upon the subject somewhat differently now than some of you, I once had exactly your vision, your opinions and your knowledge of the work.

The specialist in any science is very often regarded as an extremist, but the higher the development of our knowledge along any line the more exacting we become, because experience teaches us that extreme measures are necessary to the greatest success. After ten years in the practice of orthodontia I am now more particular in my work than I was several years ago, and I must of necessity be so if for no other reason. A very mediocre inlay or bridge may be inserted in the mouth of a patient and give fairly good service, and the patient may feel that his dentist is the very finest and most expert workman in the community. Not so with orthodontia; the work must be well done—almost perfectly so—or the teeth will not stay where they have been placed, and the man who did the work will, sooner or later, when he has several such patients abroad, be looked upon as the poorest dentist in his community, notwithstanding the fact that he may possibly have done for the same patient some of the finest work in other branches of dentistry.

It is to be hoped that I will not be misunderstood or be unduly criticized when I say that I now feel firmly convinced

that orthodontia in the hands of the general practitioner has been, and is to-day, to a great extent, a failure. The average general practitioner, as a rule, in his efforts to correct malocclusion, has not before him the one great fundamental principle—occlusion. Dr. Angle has said that “occlusion is the basis of the science of orthodontia.” To obtain lasting results in the treatment of a case of malocclusion every tooth must be so placed that it will occupy its normal position in the dental arch; each one must bear its normal relation to those adjoining it in the same arch, as well as to those with which it occludes in the opposite arch—normal occlusion.

It might be well to give you an illustration of the viewpoint of the average parent who brings a child to a dentist or an orthodontist for the purpose of having its “teeth straightened.” You will all appreciate the picture, for you have seen it many times. Perhaps only one, or possibly more, anterior teeth are out of harmony with the others, and this is what attracts the parents and impels them to bring the child to the dentist. Almost before the child is seated in the chair the mother will call your attention to the one outstanding mark of the irregularity—a certain tooth, or teeth; for instance, the cuspids, if the child is around eleven years of age or over, which stand either buccally or lingually in their relation to those adjoining them, usually to the buccal. This feature of the malocclusion orthodontists look upon as the “symptom.” There does not seem to be sufficient room in the dental arch for these cuspids, and the parents think Mary has too many teeth, or, as we sometimes hear reported, a “double row.” The mother will often commence to suggest to you what she thinks might be done to relieve the unsightly appearance, viz.: to remove the offender, or one of those adjoining it, to “make room.” Unfortunately, too many dentists have agreed with the mother as to the treatment of these cases. Other men again have been more alive to the value of a tooth, and will not resort to this destructive procedure, but will endeavor to show the mother how the arches may be expanded and room made for these teeth, at the same time preparing the way in advance for the receipt of an adequate fee for the amount of work which they know will be involved. The mother will want to know how much it will cost. If you are compelled to solve this problem accurately, it is more difficult than the diagnosis of the case, because you must first make a complete diagnosis before you can state a fee. To do this will necessitate the making of models from good plaster impressions, showing not

only the crowns of the teeth but also the tissues overlying the roots so that you can judge as to the angle of inclination of those roots. Many a dentist, as a result of lack of experience, cannot see the whole work involved and may possibly figure, without models or without studying the occlusal relations of the pre-molars and molars, that he can just put on an arch and draw the laterals and centrals and possibly the first pre-molars out a little and press or draw the offending tooth or teeth into alignment. He may not take into consideration the relation which the teeth of one arch bear to those of the opposing arch, but just figures on "straightening the front ones." The mother has impressed him with the fact that both she and the child's father do not care so much about the "back" teeth, but they want Mary's front ones to look nice. She has told him, too, that Willie's teeth are just like Mary's, but, of course, that does not matter so much in his case as he will probably in time grow a moustache to hide them. There are many of these pictures which I have tried to have you see in your mind's eye, differing more or less as to detail, but we cannot take more time in their consideration. Suffice it to say that the mother's way of correcting a case of malocclusion, and the way of many dentists who see only the "symptom" and seek to correct it without due consideration of the occlusion, are much the same. It is not the "symptom" which must be corrected, it is the "cause." When anterior teeth are "lined up" in a nice semi-circle as I have described, they may look very nice at the time, but wait until the dentist has taken off his retainers. If normal occlusion has not been established the teeth will not hold where they have been placed. If any one present has corrected a case some time ago in the way I have outlined, I would just suggest that he send for the patient to-morrow and he will find my opinion confirmed.

There is only one way to do orthodontia, and I might say, too, that this applies to a great extent also to all departments of dentistry, but more particularly to that of orthodontia. The science of dentistry is a very exacting one, more so even than that of medicine or surgery. A patient who is ill from some one or many irregularities may visit a physician and receive treatment, or perhaps have an appendix removed by the surgeon, and, though neither the physician or the surgeon may have given the most expert service, nature will so assist as to restore the patient in time to a fully normal state. Nature does not assist the dentist or the orthodontist to such a degree unless the work of these men is as nearly as possible perfect.

The cabinets of orthodontists contain many pairs of models of the mouths of patients who have had their teeth "straightened" by some of the methods of which I have spoken, and no doubt the dentists who attempted to correct these cases have either learned something about orthodontia or else they are still wondering why the members of certain families are now visiting some other dentist for their general work.

Now we must get along to the consideration of the real question which was probably in the minds of the members of your committee when they asked me to present a paper before your Society.

What is the duty of the general practitioner towards those of his patients whose dental arches are not normal? What type of cases, if any, should he attempt to treat himself and which should he recommend to a specialist? In other words, what are his limitations?

I shall endeavor to answer these questions as earnestly and conscientiously as possible. I have already told you that I did a general practice for eight years, and have now for ten years confined my practice absolutely to the correction of malocclusion. I have surely seen the subject and tried out the work from both viewpoints, and the chief question now is as to whether I can convince you or prove to you that my contentions are correct. When a specialist appears before a body of men in general practice, or those engaged in other branches of the same broad science, it is a splendid opportunity for "advertising," and an expert in the business of advertising could almost prove to us that black is white, and we are told that advertising pays. Now, I am not here to advertise, in evidence of which fact it may be said that in the city where I practice the number of patients seeking orthodontic treatment is greater than can be handled by those engaged in that specialty, so there is no reason for seeking others from Hamilton. I tell you this so that when I shall later advise you to refer certain types of cases to an orthodontist, rather than attempt their treatment yourselves, I have no selfish motive in doing so, but rather that you may save yourselves future trouble and possibly the loss of good families in your general practice as a result of failure in the successful treatment of a case of malocclusion which required more knowledge of the work than it is humanly possible for a man to acquire who is endeavoring to keep up with the fast pace of advancement in all branches of dentistry. We must not overlook the fact, too, that we are not doing our full duty to our patients if we attempt work for

them the prosecution of which we do not fully understand. In your own city you have a man who has had special training and considerable experience in the correction of malocclusion, and I would strongly urge that the more difficult cases, those which have gone far beyond the period when they might have been corrected by one with a lesser knowledge of the subject, be referred to him for treatment.

Some men, I imagine, have an idea that if they refer a patient to some one else for the treatment of some special condition the patient, or, in the case of orthodontia, the parents, will look upon that as evidence of a lack of knowledge of the science in which they are engaged. The very opposite impression is created, and their patients will feel, if the matter is clearly explained, that it is impossible to be perfectly equipped in all branches and that their dentist desires them to have the best possible service.

I have here to-night a number of pairs of models showing different types and degrees of malocclusion and lack of arch development which we can discuss in detail later on. In examining these I think we can more clearly understand the points which I am seeking to bring out in my paper.

The duty of the dentist towards his patients is to *prevent malocclusion*. To do this he must know occlusion perfectly—where every cusp of every tooth should occlude with those of the opposite jaw with which they should rightly come in contact, as well as the normal contact points of adjoining teeth in the same jaw. He should commence his oversight of the mouths of his patients as soon as the temporary dentures are complete. It is not necessary to discuss with you in detail the advice which should be given mothers at this time and always re normal function and proper diet. The throats of the little kiddies should be examined to ascertain if there is present any pathological condition of the tonsils. It will be quite evident, too, if the child is not a normal breather. The nose and throat should be in a healthy, normal condition, and if it is not then it is the duty of the dentist to call the attention of the parents to the fact and recommend that the child be taken to a good nose and throat specialist for examination, and treatment if necessary. The rhinologist may not realize that abnormally large tonsils will play any part in the production of malocclusion, and he might not even know that the presence of adenoids would have any particular effect either. If it is possible to get in touch with him, it would be desirable to call his attention to these facts in order that both rhinologist and dentist may work

in harmony toward assisting normal development. The child with adenoids and enlarged tonsils should be referred to the rhinologist rather than to the general physician for the same reason that a difficult case of malocclusion should be referred to the orthodontist. Many physicians can probably do a tonsillotomy perfectly, but others again may not remove the whole structure completely and thus the operation will not be a success. I have been informed on good authority that if tonsils are perfectly removed there will be no return of ill effects from this source. Not so with adenoids, as there may be a return of these no matter how perfect has been the operation for their removal.

The deciduous teeth should have the consideration and attention which their importance demands. They should not be lost before such time as their successors should be ready to erupt, neither should they be retained beyond this period, and the time can best be judged according to the general development of the child and the eruption of other teeth in the mouth. Cavities of decay in these teeth should be repaired as thoroughly as though they belonged to the permanent set. Approximal cavities should not be allowed to progress until the normal contact with adjoining teeth is lost, and if such has resulted before the dentist sees the patient, then the teeth should be wedged apart and the whole mesio-distal diameter be restored by means of a metallic filling (not cement), with normal contact. As the child advances to about five and a half years of age there should be a natural spacing of the deciduous incisors to make room for the oncoming larger permanent ones. If this is not present, or the mesio-distal relations of the molars is not correct, then is the time to commence orthodontic procedures for this child and not after the permanent teeth are in place, as we used to advise. In fact, if the mesio-distal relations are not normal, interference should be instituted as early as it is possible to get the child to understand and submit, which is often at the age of four years or even earlier. If a child has been a mouth-breather for some time, the lower teeth will very likely occupy a distal position to normal in their relation to the uppers, and, in addition to having the cause removed and the teeth corrected, it may be quite a task to get the child to become a normal breather. Advice should be given the mother to apply at nights over the child's lips, in the form of the letter X, strips of surgeon's silk isinglass plaster, slightly moistened to apply and well soaked in the morning to remove. The mother must be alert also to train the child to

keep the lips closed during the day. If enlarged and inflamed tonsils have been present for some time, the lower teeth may be found to occupy a mesial position to normal in their relations to those of the upper arch. This condition, if allowed to go unattended, will prove the most unsightly of all malocclusions, and should be corrected at the earliest possible time. In these the parents often do not realize that anything is wrong because, even in the most advanced cases, the teeth of both arches are often quite regular in their alignment. Mouth-breathing may be present in both classes of which I have spoken.

Another important and often a causative factor in malocclusion is the presence of some one or more habits, such as lip biting, tongue sucking, biting of nails, sucking of thumb or fingers, pressing up or to one side the mandible by resting the hand against it for long periods while reading or sitting at a desk in school, and many others. These and other habits should be looked for carefully, and if any are found to be present the parents should be enlightened as to the possible baneful results. I will show you a number of models, the malocclusion being the result of various habits.

There are so many factors which enter into the treatment of malocclusion that success, particularly in advanced cases, is only possible where the practitioner has had long experience and has made a thorough study of the subject. Teeth should not be extracted to "make room" for adjoining teeth to erupt.

I believe the average man in general practice, unless he makes a very thorough study of orthodontia, should not attempt any but the most simple cases—those which have not proceeded very far in mal-development. He should aid nature in the development of the deciduous denture, where the time has arrived for the spacing which has not materialized, and may also treat those cases in the mouths of very young patients of classes II and III: Angle classification, of which I spoke as being due to the presence of adenoids and enlarged tonsils, and generally any case where the occlusal relations are normal with the possible exception of some very slight irregularity. To correct even these cases he must have an intimate knowledge of the mechanics of the ordinary expansion arch. For those who desire to look up and read an article along this line I would refer them to a paper by Dr. J. Lorne Young, of New York, in the "Dominion Dental Journal" of October, 1912, and the "Items of Interest" of an earlier date. This is, I think, the best and most concise treatise upon the technique

of adjustment of orthodontic appliances which I have ever seen. I might say that the ordinary expansion arch is very little used now by many specialists in the correction of the more advanced cases, particularly those where some of the roots stand at abnormal angles. It is not possible with this appliance, unless some auxiliaries are added to it, to correct perfectly many of the cases we see in the mouths of patients often as young as ten years of age.

A lingual arch made of 19-gauge wire, iridio-platinum (15 per cent), or of a good spring gold such as Ney's elastic oro-gold, has come quite into favor of late years. To Dr. Edward H. Angle, so far as I know, is due the credit for originating the idea of pinching the wire to lengthen it. He advocated, many years ago, placing a piece of wire from cuspid to cuspid on the lingual surface in the deciduous denture and then pinching this wire to widen the anterior part of the arch. Dr. Lloyd S. Lourie, of Chicago, is, however, I believe, the man to whom we owe thanks for the development of this mode of treatment to its present success. Dr. Lourie usually has the arch wire soldered to the molar bands, but I think Dr. Merschon, of Philadelphia, suggested the method of soldering half-round vertical tubes to the lingual surfaces of the molar bands and having the arch removable. Into these tubes is inserted a half-round wire which has been soldered to the arch, the half-round wire fitting the tubes accurately. These tubes are twelve one-hundredths of an inch long. The method pursued in the construction of this type of appliance in my practice is as follows:

Plain bands are fitted in the mouth as accurately as possible to the second deciduous molars, or permanent molars, depending upon the case. These bands extend just slightly under the free margin of the gum. The gum line on the lingual is marked on the band with an instrument, the band removed and the tube soldered about the centre of its lingual surface just the least bit occlusally of the scratch, the tube being placed as nearly as possible parallel with the long axis of the tooth. It may be necessary sometimes, particularly in the upper arch, to shorten these tubes just a little in order to prevent interference with the occlusion. When the tubes are soldered the bands are replaced and an impression taken in plaster. The bands are removed and placed in the impression and a model made upon which to construct the arch. The half-round wire is soldered to the arch wire sufficiently far from one end of the latter to permit the arch to extend to the distal of the lingual surface of the tooth upon which the band is placed, or the arch

wire, if desired, can be carried back to include a molar behind that upon which the band is situated. Part of the half-round wire is now cut off, leaving just enough to extend the full length of the tube. The arch is now bent to conform to the lingual surfaces of all the teeth and when the tube on the opposite side is reached in the adjustment of the arch the latter is marked to indicate the centre of the tube and the half-round wire which is to enter that tube is soldered to the arch and cut off as described before. Care must be taken now to twist the arch, if necessary, so that when the half-round wire is placed in one tube and the arch allowed to lie passively it will rest in such relation that the half-round wire of the opposite end will lie in proper relation to the tube on that side. The arch must now be removed from the tube into which it has been inserted and placed in the opposite one to see that the half-round wire is soldered at the correct angle on both sides. Provision must now be made for holding the arch in the tubes, and what is known as the Angle-Young lock is constructed. This is accomplished by soldering the end of a piece of wire of the same quality, of about 22-gauge, to the arch wire at the end of the latter, if it only extends to the molar upon which the band is placed, or about opposite the disto-lingual corner of the banded molar in any event. This lock wire is attached on the same surface as the half-round wire, or towards the gingival, and is allowed to extend gingivally the depth of the tube, and then bent forward at a right angle to rest gingivally of the tube and is then cut off opposite the mesial side of the tube. This soldering is all done off the model. In adjusting the arch to the tubes it is grasped at one end just at the half-round wire by a pair of narrow-nosed flat pliers, the lock wire pushed aside by pressing it against the tube and the half-round wire is inserted into the tube and pressed into place. The opposite end is now placed in the same manner. If the lock wire is springy it will lock gingivally of the tube; if not, it may be pressed to place with a suitable instrument.

To get development of the dental arch with this appliance the wire is stretched, and this can best be done by the use of a pair of pliers designed by Dr. Lourie which, unfortunately just now, as a result of war conditions, is next to impossible to obtain, or a pair designed by Dr. Angle for a similar purpose. The latter is made by the S. S. White Co., and is known as Dr. Angle's wire-stretching pliers. It is wise, when it is desired to change an arch, to make a sketch of it by placing the half-round wires on a straight line drawn upon a piece of paper and

then with a very sharp pencil trace an outline of this arch without holding the latter, because to hold it would put strain upon it and thus change its shape. Having now a tracing of the arch one can proceed to make the desired changes, and the sketch will enable you to "check up" as to whether you have done what you intended to do or not. In replacing the arch again in the mouth it should be fitted just into one tube and then the other as suggested before. Of course, now with action in the arch it will not lie passively as before, but you can bend it a little with narrow pliers in the centre so that it will lie lingual to the tube of the opposite side to that into which it has been placed, first on one side and then the other, in order to assure yourself that the angles of the half-round wires have not been changed unless you desired to change them. Now the arch may be removed from the mouth and the bend previously put in the centre straightened out again, the arch placed upon the sketch to see if the desired action has been put into it and it is ready to adjust again to place.

Only a very slight strain should be put into an arch of this kind—just a few pinches, particularly if the patient is a very young one, and it does not require to be enlarged more often than about once a month. With intelligent direction the arch just assists nature in the development of the jaws sufficiently to permit of the eruption normally of the permanent teeth. It is a most excellent appliance for the development of the dental arches where no root movement is required, but it must be skillfully handled. No ligatures are required except where a tooth stands too far labially or buccally or where one requires rotation. The molars to which the arch is attached will, of course, move bodily but may be tipped at will. I might also say that with this arch and certain auxiliaries, in skillful hands, considerable root movement can be accomplished, but that is beyond the scope of this paper. In using a gold alloy for these arches, the wire should be annealed before attempting any decided bending of it and afterward tempered again. I will show you one of these arches adjusted on a model.

All the materials necessary for the construction of this appliance can be secured by your dental dealer from the Blue Island Specialty Co. The dimensions of the tubes are 0.055 x 0.095 x 0.120 long.

Now I fear my paper has been much too long, but I trust that after we look over the models we may all of us have gotten some new light upon the subject.

Gentlemen, I thank you for your splendid attention.

PERIAPICAL INFECTIONS

M. L. RHEIN, D.D.S., M.D., New York.

Professor of Dental Pathology, University of Pennsylvania.

Read at the Fiftieth Anniversary of the Ontario Dental Society,
Toronto, May, 1917.

(Concluded from January Issue.)

I have spoken about sodium and potassium because I think its value is greater than the solution of sulphuric acid, but I use sulphuric acid with sodium potassium very often. I do not want you to think that anything that has any value in this work I want to discredit, but I believe the sodium and potassium will do its work better than the sulphuric acid alone. I think the two of them together are very valuable because one is an acid and the other is an alkali, and it is always of value to neutralize one with the other when you are through using it, so that if you use the two of them you get this neutralizing effect. Now, with sodium and potassium what happens? Wherever it comes in contact with a little organic matter that you cannot even see with the naked eye it destroys it. If you could look in there carefully you would see very fine pit holes made in what looks like a solid bed of rock in canal. Then I have introduced an instrument that I call a pick. I use this instrument the same as the laborer uses a pick to break up a piece of rock. I have them in different shapes, with different curvatures and of different diameters. They are simply a very finely tempered piece of steel with a fine point to it, and I put the point under the indentations that are made by the sulphuric acid or by the sodium and potassium on the organic part of a calcified pulp, and as a result of that any organic matter breaks down into a sandy like condition, and you will find when you remove the pick particles of any organic matter will cling to the pick. You see here a broach known as the Young broach, which I use occasionally for the purpose of applying sodium and potassium to it, but as I have mentioned before I use the apexograph for that purpose mostly. There is another variation of the pick that the 20th Century Company have made up for me. It has an aluminum handle. With your pliers you bend that pick to any angle you wish, so it can follow the direction of almost any root in which this calcification has taken place. You can introduce a minute particle of sodium potassium on the point of this pick and follow up a canal. Where you have a number of subdivisions of pulp tissue your sodium and potassium as it comes down

the mesial root of a lower molar where the pulp reaches across five or six times from the lingual to the buccal canal, picks out all this pulp tissue on the way and destroys it because of its affinity for the moisture in organic tissue. It eats it up.

QUESTION: How long does it take?

DR. RHEIN: It depends on what the percentage of organic tissue is. If there is a large percentage of organic tissue its action is quick or rapid. The smaller the percentage of organic tissue the longer time it takes. Now, when we are through for the day, after we have reached that extent of work, after using these picks and using our sodium and potassium and our sulphuric acid we now place in our canals as far as they will go sterilized wire, because without these a Rontgen-gram would be valueless. On our picture that we are now going to take, these wires show us exactly how far we have travelled and how much more of the pulp canal we have to travel. They also show us whether we are travelling true or not, and frequently if we feel that we are in danger of coming out through the side of a root I will take a picture right in the midst of my operation, or if I am through for the day I leave it and see how it is in order to determine my position the next time. The important thing is you can check this work up radiographically step by step. I have taken as much as five sittings of approximately a couple of hours each before I have finally explored the canals of an upper molar so that the wires will pass through all of the canals. Now, I can understand thoroughly the comment of you gentlemen. How is it possible to take that much time over one tooth? It if took ten times that time it would be better spent time than to leave that tooth as a means of the slaughter or the murder of that individual. I grant you that each patient must be the real judge of how much they value a tooth, and if they want to value it sufficiently to have it saved, then there is only one way to save it, and it is up to the dentist to determine whether he is willing to devote his time gratuitously, we will say, to any particular individual that he wants to save a particular tooth for who cannot afford to give that time, but the time has passed when you can say "My pulp canal work may not be quite as good as yours, but it will have to do, it is the best I can do for this individual." No, that will not pass current any more in dentistry. You have got to accomplish those definite results or you are committing murder. That is the consensus of opinion of the men who have studied this thing scientifically, and I

cannot say it too strongly, extract the tooth if the patient cannot afford it, let them wear plates, but do not stultify yourself, do not try to think you can put pulp canal work on a comparative basis. You can say, "My inlay may be a little better than yours, but I know your inlay will save that tooth." It may not be as artistic, it may not have as good articulation as mine, but it is going to save that tooth. You cannot say that of pulp canal technique. You have got to either accomplish those results or your operation is a failure. I have spent 20 hours of work on a tooth and then told my patient the operation is a failure, I have got to extract it, and I have extracted it, and the patient has paid me for it, and has not only paid me for the extraction but for the time I have spent, because the patient has appreciated the fact that I have been honest enough with him to admit that the operation was a failure after I had put all that I could into it to save it. Now, the great object of all this thing is for dentists to assume the proper surgical attitude, that they do not know whether they are going to succeed. If you want to save the tooth I will do the best I can, my services are worth so much for the time I am giving to it; if I fail it is no fault of mine, and my fee is due me for the time I am giving you. I am going to be honest enough, honorable enough, to tell you when I am through whether I have succeeded or not. Those are the principles that should actuate us in this operation. (Applause.) I introduce that at this point because I have noticed that when I get to this point the audience, or a portion of them, sneer and turn up their noses in a way, at the idea of spending that much time over a given tooth. I say it is between you and your patient, that or extraction.

Now, these fine picks are of inestimable value in handling your material, whether it is sodium and potassium or sulphuric acid to trace out as they will the infinitesimal portions of pulp tissue, and your X-ray picture when you come to study it and examine it after you have given your first operation, because I do not care whether it is a single rooted tooth or not, there isn't the simplest single rooted tooth that a man has a right to seal up until he has put a wire through the end of that root and has examined it carefully from a Rontgengram. There is no more objectionable practice than what is known as immediate root filling. The X-ray has put its condemnation upon anything of that nature from beginning to end. It is the wire that you put in your canal and the number of wires that you can put in every kind of embrasure that is going to disclose to you the interior anatomy of that tooth so that finally

we have a picture before us, as I will show you to-morrow, of a tooth with wires that penetrate every one of our foramen, and when we have reached that point we have reached a stage where that tooth is ready for the destruction of the granuloma at the other end of the canal. Not until our wires have passed through the ends of the roots of the tooth is that tooth fit to be treated periapically for the extirpation of the granuloma. From 1880 up to 1893 I did on an average—I won't say in the early '80's, because I didn't have a patient then to do it on—but later on, when my practice became larger, there hardly was a day that I did not do root amputation for the purpose of extirpating diseased areas around the ends of roots. In 1893 we first developed the subject about which I spoke to you to-day, cataphoresis and ionization, that has been relegated to the junk heap by so many men. From cataphoresis to ionization was one step. I remember in 1893 or 1894, when discussing the subject of cataphoresis with Professor Morton in New York, he suggested the possibility of my using it as a method for the destruction of these pathogenic conditions, as he was using it at that time for other diseases in the body. I adopted his suggestion, and while we had no X-ray at that time, the clinical evidence was so highly in its favor that I used it more and more, and I presented my first report of the value of ionization in 1897, in the summer, at a meeting in the White Mountains of New Hampshire, and published in the items of interest of that year as the White Mountain meeting. I have continually increased the use of ionization from that time on because I am convinced that in it we have an absolute means of removing these tumors around the ends of the roots of teeth if we understand what we are doing. I believe we are able to remove all of that pathogenic condition unless we have places where the root substance itself is badly necrosed. We must remove surgically necrosed portions of cementum. I have no use for the radical value of ionization in those cases where we have a necrotic area on the root, and I would like to have you clearly make that demarkation in your mind, but as far as these tumors are concerned, I believe in ionization we have a means for that purpose. For two years I have been working doing research work with Professor Dyce of Columbia in regard to how it is done, and the further our work progresses the more positive I am as to the correctness of my clinical intuition from the start. It would be unfair to Professor Dyce as well as to myself to go into the method by which ionization does its work, because that work

will be published when we are ready to publish it. It will very likely be some time, because it has been very exhaustive work. We have used two bacteriologists continuously during this time working out the method. We have worked at that work from the very beginning, and we hope that once our results are published, it will not be any sudden fire, but that it will be exhaustive enough to satisfy the most critical. You cannot remove a large tumor by means of that kind in the same time that you can a small tumor, and consequently in the same time that you can a small tumor, and consequently I want to draw the attention of those of you who are using ionization that the more power that you can use, the greater amount of energy that you can use, the less time you require. You require time and power. Now, we measure our energy by milliamperes that pass through the foramen of our tooth, and we speak of it in milliamper minute, and I will say the length of time I ionize a given infected area varies from five minutes for one milliamper to an hour of one milliamper, because I have used and do use frequently as much as three or four milliamperes running for a period of a full half hour. Now, many of these ionization outfits are incapable of producing sufficient energy, and they are valueless. Those of you who have been acquainted with cataphoresis realize that you can increase the galvanic current as it passes through without pain by gradually raising the milliamperage, and the point I dwell upon is that you can raise that energy to the full capacity that the individual can stand with impunity. It makes no difference ultimately if you destroy this morphologic tissue and enter into the old tissue to some extent. It makes very little difference, you are going to get a regenerated new tissue there, and unless you get, through the Rontgengram, proof of that fact, you have failed. I have the audacity to stand before you here because my picture here shows that we reproduce that tissue, but we cannot reproduce that tissue with a half milliamper of current running for five or six minutes when you have a large amount of diseased area. It requires time and judgment on the part of the operator as to how much time you have to take. You very likely have all been made familiar with the methods of ionization, that you run your anode through the the anode as possible, and on that account I use a sponge on the body. Personally, I believe the cathode should be as close to the anal as possible, and on that account I use a sponge on the cheek as close to the tooth that I am operating on as possible for my negative pole. There are different means of ionization

advocated in regard to the anode. While originally I used the platinum anode as we were using it in cataphoresis, I reverted from that to the chemically pure zinc anode with the salt solution in the root canal, and that is my preference at the present time, though I occasionally use a chloride of zinc solution in there. I believe they both will do the work. My experiments should me we could use an iron anode or a copper anode or any old anode and get the result that we are aiming at. Now, it would take me an hour to go into the theory of how this growth is destroyed, but what I want to impress upon you is that it takes a great deal of current to do it. There is no need of any pain from it if you have a reostat so shunted that you can gradually raise it to the point you desire. The patient will get a little sensation at the start through the sponge where the cathode is, and after a while it will begin to give a little sensation between that and the top of the tooth you are working on. you will know by that that your current is working well, but it won't be any pain. There is a time in a large number of these operations where after a while the patient will commence to get a real caustic pain, and that is the sensation that I always like to get, because to me it is like the feeling if I am doing a surgical operation after I have cut out my diseased tissue and I am in live tissue where the nerve fibrils are active and freely manifest themselves in contra-distinction to the lack of that in the pathological tissue. When I have the patient tell me that this is commencing now to really feel like burning them I feel that my current has now gotten into live tissue and that I can practically stop. We do not always get that sort, and no man can start using ionization and feel that he can jump into it with just written directions. You must feel your way. You have to learn from your results, and the only result you can learn from is the regenerated alveolar structure that must show there six months later in place of a rarefied area that was there before. Then, having ionized that structure we will say sufficiently, we come now to the root filling. This is the one place where we must again use our asepsis in the strictest phase of the subject. There has been a great deal said about the lack of asepsis in these pulp operations. Up to this time it must be reasonably considered. The rubber dam should always be in place in pulp operations. There is no excuse for its absence. Now it is imperative that everything about the tooth must be aseptic, even the hands of the operator. I myself carefully cleanse them at this stage with an aseptic soap and wash them with alcohol prior to doing

my gutta percha filling. Here is where I use that little Young broach that I showed you. We have little bits of shreds of cotton, and they are sterilized. Everything is sterilized that I am going to use preparatory to the root filling. My next picture will show you the method that I use in sterilizing. I have improved to some extent what is known as the Pence sterilizer for this purpose. You see also in the picture an instrument I have devised for the measurement of root canals, and it is of value because you can get an exact millimeter on this gauge, and as your wire passes through it will show you the distance. You wonder sometimes in these calcified roots if you are making any progress, and when you see that measure five millimeters and six millimeters you know you are progressing. The next picture shows you the ionization outfit that I designed myself, but there are plenty more that are just as good. Here is the Pence sterilizer which I have modified to some extent. I have put a tray in, and we have a steam heated system, and I put in this tray all my collection of root canal pluggers, some with cotton around them and some without, my collection of broaches with bits of cotton around them, and some of these points made by the Johnston people. You know it is a joke to think you can take a point from a Johnston sterilized box and feel that that is sterilized. That is not the kind of sterilizing that interests me. Everything has got to be sterilized, and it is in proper condition when the proper heat has been generated, and the moisture is kept out, which is the great detriment in steam headed systems, as the moisture is apt to gather around your surgical dressings. The next picture is a picture of my girl as she handles the Pence sterilizer. I simply want to call your attention to the fact that this is the part of the operation where it is important and essential that we must be on our guard against reinfection. After you get your filling material to seal the periapical opening of the foramen, your chloroform will be a good enough antiseptic to take care of everything that has reasonable cleanliness with it.

Now, I have taken more time than I should have this afternoon, and I will stop at this point, and to-morrow I will show you some pictures showing you how I take up individual cases, starting with an incisor and going through the different bicuspid and molars, and I will show you the teeth after showing you the regenerated alveolar structure. I know of no other way of demonstrating the results I am endeavoring to teach you. (Applause.)

Selections

A WARNING

This profession of ours has been built up by continuous and exacting effort on the part of conscientious men who have had at heart more the welfare of dentistry than any personal aggrandizement. Connected with its development are the names of many self-sacrificing and noble men, the mere mention of which would make an array well worthy the pride of any profession. We have grown to revere the names of those men, to hold them up in our minds as examples of the highest professional and ethical rectitude. They form the sweetest savor of our inherited traditions, and furnish the chief incentive for renewed effort on our part to further advance the best interests of dentistry. They have left us a heritage which is rich in hallowed associations of the formative period of a worthy calling, and we owe it to them that we maintain to the fullest extent the reputation that they have given to our profession.

Not only this, but more recently we have been furnished an added incentive to exalt our professionalism in the action of the Federal Government with respect to our status in the army, and we are under deep obligation to devote ourselves wholly and solely to the welfare of the profession, the Government and the particular people we serve. Everything points to the stern necessity of consecration on our part to the development of true and unselfish professionalism in our ranks.

But what do we see? Too frequently we are compelled to witness the worst form of commercialism entering into dentistry. It comes in various guises. Sometimes it is outspoken and brazen, which is bad enough. At other times it hides behind the skirts of pseudo-professionalism, which is worse. A man may be a member of a dental society and yet commercialize his calling disreputably. He may impose on the people he serves to their detriment; and when he wilfully does this he commits a grievous wrong. Sometimes it would almost seem as if there were as many sinners within the church as without, but of course this is, strictly speaking, not true. What makes it seem true is because we notice delinquencies more quickly among believers than among non-believers. The point is that there should be no delinquencies

among the believers—neither should there be violators of true ethics among dental society members. To impose on a patient in any way is a violation of ethics just as surely as is a display advertisement in a newspaper. This fact should be ever in the mind of every society member, and it should govern him at all times in his treatment of patients.

In recent years the chief violation of true ethics in the profession has related for the most part to the commercialization of fads. Every new idea, flimsy or otherwise, has been paraded before the people as the cure-all for everything dental, and the public has been worked to a finish as long as the fad lasts. Go back as far as cataphoresis. A legitimate effort on the part of the profession to painlessly prepare cavities for fillings was turned to commercial purposes in the most shameless manner, and it was not till the public itself rebelled that the fad died. In 1893 a paper was read before the general session of the World's Columbian Dental Congress sagely setting forth the edict that hypnotism was to be the future reliance for performing dental operations painlessly, and a prominent editor of one of our journals contended that five years would see it the recognized practice among all progressive dentists. But it took less than five years to bury it so effectively that it has never been resurrected. The people turned their backs upon it—thus showing their good sense—and it died almost before it was out of its swaddling clothes. Then came analgesia—commercialized to the last limit. Every practitioner who did not sanction it was dubbed a "fossil," a "moss-back" or worse; and it was proclaimed from the housetops as the panacea for most of the dental ills. And dentists themselves were not the only ones who fostered this fad. Some of our supply houses entered on a propaganda of education and instruction—for commercial purpose, chiefly—showing the profession how advantageous it was (commercially, chiefly) to introduce analgesia in their offices; and not stopping at this, they did not hesitate to discredit, and in some instances even to malign, men in dentistry who conscientiously objected to this practice. It requires courage in these days to oppose every passing fad on account of the vituperation that is heaped upon the head of the man who does it.

Then again it is not always so much the particular method of practice that is objectionable as it is the commercialization of it. Even so valuable a thing as oral prophylaxis is in danger of being brought into disrepute. Rash and unwarranted

statements are constantly being made to patients in connection with this work, to the effect that the teeth will never decay or become diseased in any way if they are treated by this method once a month. There are mouths in which this may hold good, but there are others in which it emphatically will not, and the plain truth should be told to the patient.

Local anesthesia, beneficent as it is, will soon be brought under the same category unless saner methods are advocated in its use. To make a general practice of injecting the surrounding tissues for the purpose of preparing cavities in the teeth is a procedure wholly unwarranted, and even in the most extreme case of sensitiveness it is doubtful if it is justifiable.

So useful a thing as the X-ray is being commercialized, and let us go further and whisper it in secret places that the bug-bear of focal infections is not escaping the general tendency. The fears of the public are being played upon in a wholly unwarranted manner, and commercialism is running rampant, feeding upon these fears. Myriads of useful, valuable and perfectly harmless teeth have been sacrificed upon the altar of this Moloch of focal infection, and the end is not yet. Please let it be noted that this is not an argument for leaving any infected tooth in the mouth—merely that the practitioner should be certain that it is infected or cannot be cured.

If all these practices were due solely to misconception of facts there would be some justification for them. Men are not infallible in their judgment, and should not be censured too severely for mistakes. But when the canker of commercialism is plainly discernible all along the line, there should be no quarter for the offender. And the warning is that unless these methods of imposing on the people shall stop, the fair name of dentistry will be so besmirched that a generation of men shall rise up and heap maledictions upon our heads. The precious heritage of all the years of unselfish endeavor on the part of the founders of the profession will pass for nought, and we shall revert back to the status of an offensive commercialism.—*Editorial, Dental Review.*

Dental Societies

LADIES' AUXILIARY, C.A.D.C., SASKATCHEWAN

REPORT OF COMMITTEE OF C.A.D.C. AUXILIARY.

As treasurer, I beg to submit the following list of names of dentists of Saskatchewan who have subscribed to the C.A.D.C. Auxiliary:

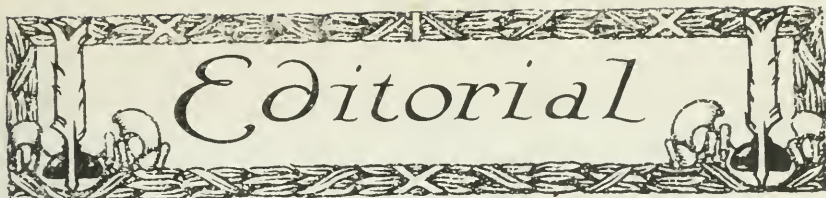
Dr. N. G. Robb, \$10; Dr. T. W. Parker, \$15; Drs. Swartout & Toren, \$5; Dr. J. Silkmitter, \$10; Dr. Elwood Cox, \$10; Dr. T. S. Vanivert, \$10; Dr. C. W. F. Skinner, \$10; Dr. W. W. Irvin, \$25; Dr. W. A. Wenner, \$5; Dr. G. T. Brearley, \$5; Dr. D. S. Howden, \$5; Dr. A. J. W. Brett, \$5; Dr. L. R. Graham, \$6; Dr. T. K. Switzer, \$15; Dr. W. Winthrope, \$10; Dr. Barnes, \$6; Drs. J. A. Gregor Smith and Fraser Smith, \$20; Dr. L. Strange, \$5; Dr. C. W. Wreeker, \$10; Dr. W. H. Smith, \$10; Dr. R. Lederman, \$25; Dr. C. M. Truman, \$5. Expenditure: January 28th, Leader Publishing Co., \$8.65.

The following ladies supplied good things for Christmas boxes sent to the dentists from Saskatchewan who are on active service: Mrs. L. J. D. Fasken, Mrs. R. Lederman, Mrs. C. H. Weicker, Mrs. A. Y. Cowan, Mrs. Irvin Robb, Mrs. Gregor Smith, Mrs. C. H. Cowan, Mrs. Rogers, Dr. G. Armstrong, Mrs. A. F. Dyer, Mrs. Gardiner, Mrs. Barnes.

GRACE E. ARMSTRONG, Treasurer.

BRITISH COLUMBIA STUDY CLUBS

Last winter a Study Club was organized in Vancouver for investigating the newer phases of root canal operations. The year's work was so successful under the presidency of Dr. T. W. Snipes that this year four study clubs have been organized. The original club is still continuing its researches with the assistance of radiography. Dr. J. Milton Jones is chairman of the Oral Surgery Club; Dr. MacSween presides at the Prosthetic Club, and Dr. J. E. Black has charge of the Prophylactic group. These several clubs meet separately every second week, and all meet together monthly as the Vancouver Dental Society to discuss progress. Each member pays a fee of ten dollars, and with the funds thus obtained it is the purpose of the society to fit up a club room, with operating facilities for clinics, and a library of recent dental works and the current magazines.



Editorial

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No. 2.

A DENTAL CAMOUFLAGE

During the past few years the questionnaire has been highly developed in the dental profession. If a dentist is asked to write a paper on any subject he immediately sends out a number of questions, the answers of which will give the necessary data, thus saving much time in looking up the literature on the subject. If an author has some particular bias on a controversial subject he frames several questions in such a manner as to get the answers he wants. The latest touch is to frame a number of questions so the answers will make a suitable recommendation for a method of practice, an appliance for sale, or a book. Below we print a good sample of the latter method. It is quite clear what answer is expected for each question, but let us set down the answer we think might properly be made:

1. Is individual movement of the teeth in bridge work essential for the preservation of abutment teeth? Answer. No.

2. (a) Is it true that in fixed bridge work large saddles create a baneful influence upon the mucous membrane? (b)

• That such saddles produce a stasis about the area and retrogressive changes ensue?

Answer. (a) Yes; but very few fixed bridges have large saddles.

(b) There is an undoubted eschemia if there is pressure, but retrogressive changes would not likely take place until there was a reaction against the injury. So far as the writer knows there has been no careful microscopical examination of the tissues in question to establish just what pathological changes take place. Retrogressive changes may take place without pressure, but stasis is a late process, and need not have been mentioned here, any more than many other changes in tissue due to irritation.

3. Do such retrogressive changes in the mucous membrane expose the patient to the absorption of toxins from the fetid matter about such an area which causes a slow poisoning and a slow death? Answer.—There are three questions asked in this one, and note that they all depend upon the large saddle bridge and the retrogressive changes. The patient is exposed to: First, absorption of toxins; second, slow poisoning; third, slow death. Yes, the patient is exposed to absorption of toxins, but he may not absorb them, then he would not have slow poisoning or slow death from this cause, but he might absorb the toxins and not have slow poisoning, and hence not slow death; or he might absorb the toxins and have slow poisoning and not slow death from this cause.

In question four is revealed the purpose of the questions:

4. If the above statements are true, has not the time come for the instruction in fixed bridge work to be abolished in our dental institutions? Hundreds of embryo dentists are turned out every year from our dental colleges with an elaborate knowledge of how to infect and poison their innocent clientele. Would such action be tolerated by the medical profession?

Note in the first place that questions one, two and three are no longer called questions, but are now statements which the answerer is supposed by this time to have acknowledged as facts. Fixed bridge work is to be abolished from our dental institutions, because fixed bridges with large saddles may cause retrogressive changes, which may cause toxins to be absorbed and slow poisoning and slow death. This may be an argument against fixed bridges with large saddles, but why abolish fixed bridges with small saddles, or fixed bridges with no saddles at all, just because fixed bridges with large saddles may cause such dire results? The fact is dental institutions

as a class are not teaching fixed bridge work with large saddles. The answer to the first part of the question is No.

The second part of the statement is a deliberate falsehood, and cannot be answered in the affirmative or negative. This question is very adroitly asked. It is fixed so that it must be answered by either yes or no.

The fact is these questions taken as a whole are intended to get answers which will condemn fixed bridge work and naturally promote removable bridge work, and incidentally make a market for certain removable bridge work appliances now for sale.

Correspondence

A FEDERAL DEPARTMENT OF PUBLIC HEALTH

Rt. Hon. Sir R. L. Borden,

Prime Minister of Canada, Ottawa:

Dear Sir.—Permit me in the first instance to congratulate you on the success of the Union Government in the recent elections. I trust that that victory will enable many questions to be handled with a fearless dispatch which might be very difficult or even impossible under a strictly Partisan Government.

There is one question, Sir, which it appears to me has never received the consideration which its importance to our National welfare would fully warrant it to receive. I refer to the question of Public Health. Under ordinary conditions and in ordinary times it seems to me that this question is of sufficient importance to command the attention of a separate department in the Government of our country. At the head of such a department, needless for me to say, should be a Medical authority who has special qualifications for that position. We are living, as many of us well know, in specially trying times and under specially trying conditions. We are not only straining every nerve nationally, but we are largely doing so individually. This country has contributed gloriously to the common cause. The reflex action is coming and one of the ways it is going to manifest itself is in the health of the people of the country.

From this time onward our gallant soldiers will be returning in ever increasing numbers, many of them broken and diseased. Unfortunately some of these diseases are a

danger not only to those who carry them in their bodies, but also to many others with whom they come in contact.

I hear with satisfaction of the steps being taken by the Government to provide Sanatoria for the care of Returned Soldiers who are afflicted with Tuberculosis. Our annual deaths from Tuberculosis and Typhoid fever (preventable diseases) exceed our total casualties during the first two and one quarter years of the war. It has been estimated that if a sum of money equal to our annual economic loss from Tuberculosis alone were set apart for its treatment, that before the money were expended we would have practically no Tuberculosis in this country, provided we did not import any more. This suggests the fact that health qualifications might very well be added to our emigration requirements. We have sufficient disease of our own without importing it.

There is another equally depressing question which I note also receiving some attention where the soldiers are concerned, the question of Venereal disease. Is there not some one of authority in this country who has the courage and conviction necessary to tackle this problem and also that of Tuberculosis among the civil population? With the victims of other diseases one can usually have deepest sympathy from the fact that they are usually contracted without any fault on the part of the victim. With the victim of Venereal disease, one cannot, in the large majority of cases, have such sympathy. The viciousness of their own lives is the usual cause of their misfortune. Little compunction need therefore be felt in the enforcement of drastic measures (legislative if necessary) to better conditions with respect to these diseases. Special precautions should be taken to protect the innocent. Is it not possible to hold in check those who knowingly and deliberately spread these diseases? Note the conditions which the first army draft of one and one quarter million men to the United States army revealed in that country. Ours will soon be as bad unless early attention be given. In one Canadian camp in England seven thousand cases were reported.

As you are probably well aware Great Britain, Germany and other countries at war are already giving considerable attention to Maternal, Infant and Child welfare, hoping in that way to replace their manhood, lost in the war. Would it not be good policy for this country, which is looking so anxiously for emigrants to increase its population, to give

the necessary attention to preserve the best little emigrants that it is possible to secure, the children who are born and brought up in this country? Without going into detail let me just say that our infant mortality is very much higher than the economic, climatic and other conditions of our country would warrant. Approximately thirty per cent. of our total deaths are children under one year of age. About forty-five per cent of our total deaths are children under fifteen years of age.

There are many things I might mention, such, for example, as control of outbreaks of contagious disease. Take, for instance, the outbreak of Infantile Paralysis, which occurred a few years ago. Had there been in existence at that time a real live Department of Health, which would have seen to it that the Local Health authorities in the places where it first broke out adopted heroic measures to prevent its spread to other communities, there is no doubt in the world that a great deal of expense, trouble and loss would have been spared this country. Other matters such as Car Sanitation, Hygienic care of food during its preparation, Industrial Hygiene and so forth would naturally come under the care of such a department.

It may be urged, Sir, that it is the provinces that should take charge of many of these questions. Many of the provinces are indeed taking hold of the problem and I am glad to say that the Government of Alberta is considering measures which will, I believe, place Alberta in the front rank in this respect. I submit, however, that many questions such as Tuberculosis and more especially Venereal Disease, might better be tackled by a Dominion Department. In regard to many others there is doubtless a dual responsibility. I believe the time has come when we must tackle these problems.

• must either live up to our obligations in this respect or suffer the consequences of our folly, economically as well as physically, mentally and morally. This is a case where the sins of the fathers will most certainly be visited upon the children not merely unto the third and fourth generations, but for many generations, if not for all time to come.

I trust, therefore, that you will see sufficient merit in my suggestions to consider the matter seriously and introduce it to your brothers in responsibility in the Government. I write to you, Sir, because I believe you are now in a position to give

the question your most impartial consideration and tackle it in an honest endeavor to fulfill your obligations to the country in this as in many other questions which may from time to time come up for your consideration.

Respectfully yours,

Edmonton, Alta.

G. J. HOPE.

Obituary

THE LATE CAPT. ROSSWELL M. BURGESS

The death of Capt. Rosswell M. Burgess, son of the late S. L. Burgess of Burgessville, Ont., which occurred at the Base Hospital, Toronto, January 4, 1918, has been regretted in all circles. He was buried in St. James cemetery on January 7th with full military honors.



The late Capt. Burgess was born in Dowland, South Dakota, in 1884.

His early youth was spent in Burgessville, where he received his public school education. He graduated from the Royal College of Dental Surgeons in 1911. Four years later he was married to Edna, daughter of the late Joseph Stewart, Toronto. His widow and infant son survive him.

Capt. Burgess enlisted for overseas service in the C.A.D.C. in December, 1916, spending the summer following at Camp Borden.

He was a member of the Masonic Order (A. F. and A. M.), Royal Orange Lodge 140, Xi-Phi-Psi Fraternity.

Wherever he went, Capt. Burgess was well liked on account of his bright, genial manner and warm-hearted and unselfish nature.

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Original Communications

WAR PROTHESIS

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Read before the American Institute of Dental Teachers in Pittsburg, January 29th,
1918.

When the writer of this paper received an invitation—which under war conditions amounted to an order—to prepare an essay on War Prothesis “with a view of delineating a short course for senior dental students, during the second term of each year,” he gasped at the enormity of the task. Though the short meetings of the American Institute of Dental Teachers call for brief papers, it is nevertheless expected, of essayists, that they lay down the fundamental principles of the subject under study, and show the simplest methods through which they may be presented to students. Anxious, however, to do his bit for the welfare of those who risk their lives for the sake of our liberties, he undertook the task willingly and he makes no other apology for such faults as may be found in this essay except that the time at his disposal was too limited to allow him to do better.

Three years of war have opened new and ever-changing fields of research in dental prothesis, and the bringing down to fundamentals of such advancements as have been accomplished so far, entailed the re-reading and the re-digesting of hundreds of pages, the noting of many serious suggestions, the graspings of ideas (often well conceived but imperfectly rendered by speech or illustration, or *vice versa*), and the careful elimination of frills and fads, which, less than anywhere else, could be tolerated in a field so pregnant with dangerous, or even fatal complications.

War prothesis may be divided into three distinct fields of research:

1. The Ante-Bellum field, or ordinary dental prothesis as applied to the otherwise healthy soldier, going into, or during his stay in the field.

2. The Bellum field, which treats of such help as the dental prothesist may be called upon to offer to the oral surgeon while the wounded soldier is under treatment.

3. The Post-Bellum field, or restorative prothesis, which treats of the restoration by prosthetic means of the functions and the tissues of the maxillary bones, and of the exterior esthetic aspect of the face, lost through wounds received at war or through the subsequent treatment of such wounds.

ORDINARY DENTAL PROTHESIS AS APPLIED TO SOLDIERS IN ACTIVE SERVICE.

Considered superficially this field of endeavor does not seem to call for any special attainments on the part of the dental prothesist other than those necessary in ordinary practice. Thoughtful consideration will show, however, that conditions which must prove to be different, both for dentist and for patient, call for more complete and effective preparedness on the part of the former.

The dentist must be ready to do the largest amount of work within a stated period of time and in as few sittings as can be made compatible with effectiveness. This is especially true for members of the Dental Army Corps, when on duty in concentration camps, at home or abroad. Military units keep coming and going, and the prothesist never knows how long a particular patient may remain in the vicinity of his establishment.

I have been told that the number of undelivered plates and bridges in some Dental Army Corps establishments, in Europe, would be a delight for a dealer in scrap-gold and second-hand false teeth.

This drawback could easily be overcome by teaching fourth-year students how to take both an accurate impression and an accurate plastic bite at one and the same sitting and to adjust the finished plate at the next.

The number of sittings for bridges and crowns can also be made fewer by preparing the abutments, making the crowns and taking the impression at the one sitting.

Not only should prosthetic work for soldiers on duty be *quickly* made, but it should, above all, be *serviceable*. The military dentist must stretch his code of ethics even to the point of sacrificing not only esthetics, but even all doubtful teeth

which under other circumstances he has been taught to endeavor to preserve.

Effectiveness of mastication, easiness of repair, durability and strength should be uppermost in the dentist's mind when making prosthetic work for soldiers. He should remember that a soldier at the front may be weeks and even months away from all dental help, so that all complicated and delicate dental apparatus, such, for instance, as Chay's or Gilmore attachments, thin bridges with Steel facings, etc., may often prove more of a hindrance than a help.

In France, were the private soldier's five cents a day debar him from paid dental service, and where the government is not over lavish with funds for the dental army service, dentists have found a very ingenious way of combining strength, effectiveness and cheapness by substituting vulcanite for porcelain teeth and a nickel composition for platinized gold, for the clapps of partial plates.

A field Motor Dental Laboratory, used as an auxiliary to the field Dental Motor Ambulance, is also a French invention which deserved better recognition by the military authorities over there, and of which the Canadian and American Dental Army Corps might be able to make effective use.

It will be seen later on in this paper that dental education owes the French dental profession, the last to be recognized by its national military authorities, a great debt of gratitude for what it has so far accomplished in the line of war oral surgery and war prothesis.

It is possible that this very lack of early recognition may have been the indirect cause of many precious discoveries, inasmuch as (most dentists of military age being drafted for the front as fighters) dental service for the army had to be taken up, voluntarily, by the older men, mostly dental school professors, who made it a labor of love and devotion. The result was to open this line of research to the best mental efforts of such men as Godon, d'Argent, Villain, Roy, Blaster, Martinier, Choquet, Delair, etc., who found in it a fertile field for their highly trained minds, as well as a solace to their sorrows.

BELLUM OR ACTUAL WAR PROTHESIS.

As early as 1870 some dentists, led by Peter and Delalain, had begun to work in conjunction with military surgeons to help in the setting, retention and restoration of maxillary war fractures.

"The many discoveries made in surgical and restorative prothesis since 1870," says Paul Martinier (*Congrès Dentaire*

Inter-Alliés, Nov., 1916), "made it imperative for us to do better, and modern methods have made it possible for our interventions to be more immediate, and consequently more effective than heretofore. It is now an accepted fact that the immediate intervention of the dental prothesist in most cases of maxillary traumatism, and his constant collaboration with the surgeon is essential for the obtaining of satisfactory results."

MATERIALS USED IN WAR PROTHESIS.

It is now considered that *plaster* alone guarantees an exact impression of cases under treatment. No other material is as trustworthy for this class of work. If we except gold and platinum, which can be used but exceptionally, on account of their excessive cost, we may say that silver, aluminum, tin, German silver and "Victoria" metal have frequently been used with success for "all-metal" appliances. Most French prothesists seem to prefer silver for all cast work. This metal, however, cannot conveniently be used in conjunction with rubber. Aluminum and its alloys, as well as German silver, have been used with success in the combination with vulcanite, which, in its hard, soft or medium state, is often found most useful.

CLASSIFICATION OF APPLIANCES.*

Appliances which can be made by the dental prothesist to help the surgeon in the treatment of fractures of maxillaries may be divided into two principal groups: *Reduction or bone-setting* appliances, and *Retaining* appliances.

Setting or reducing appliances are those used to force into their proper relations to each other, fragments of broken maxillaries.

Retaining appliances are used to make immovable broken fragments of bone after they have been set in their proper places, either permanently or until the completion of reossification.

FRACTURES OF THE MANDIBLE SETTING APPLIANCES.

Setting appliances for the lower maxillary fractures may be: *Mono-maxillary*, *Inter-maxillary* or *Cranio-maxillary*.

Mono-maxillary appliances are mostly *intra-buccal*. They are attached to the teeth and resemble an orthodontia apparatus. They are made to produce force which may be continuous, intermittent or composite. Such force is obtained from springs, rubber bands, jacks, ligatures, etc. In *inter-maxillary*

*This classification was made by Dr. Martinier, professor at the Dental School of Paris, and eminent French dental author.

appliances, as the name implies, the appliance is attached to both jaws, one of which is used as an anchorage to draw or push the broken bone and teeth of the other in their proper places.

Cranio-maxillary appliances resemble those used by orthodontists when correcting prognathism of the lower jaw.

RETAINING APPLIANCES.

Retaining appliances for the lower jaw are divided into three classes:

10. Those which produce immediate retention and which are applied to cases where the setting of fragments can be immediate. They may be: *External*, such as sub-maxillary splint in conjunction with cranial bandages; *Bucco-external*, which include splint, such as Delair's, Ringley's, etc.; or *Mono-maxillary* (intra-buccal), such as inter-dental splints of all kinds, etc.

20. Retention may also be had by the same apparatus from which the reduction of the fracture has previously been obtained, these are mostly intra-buccal and inter-maxillary. They consist of a combination of inter-dental splints, rods, cranks, etc., and they form the most interesting group. It is in this class of appliances that a number of French dentists such as Drs. Martinier, Villain, Roy and others have worked wonders.

30. Retention may also be obtained by immobilization of the temporo-maxillary articulation. For this inter-maxillary, intra-buccal appliances are used, such as Gunning splints or independent superior and inferior inter-dental splints ligatured to each other.

THE MAXILLA REDUCTION APPLIANCES.

Setting appliances for fractures of the maxilla are *mono-maxillary* and mostly *intra-buccal*. The force used may be *continuous* or *intermittent* as the case may suggest.

Retaining appliances used for this bone are either *mono-maxillary*, *inter-maxillary*, or *cranio-maxillary*.

Fractures of the superior maxillary bone do not call for such complicated apparatus as those of the lower jaw and need no elaborate discussion, as any ordinary prothesist or orthodontist may well be able to handle them.

The main point to be considered and which can not be over-estimated in the treatment of fractures of both jaws, is that the intervention of the dental prothesist should be immediate. This calls for the presence, in all base hospitals at the front,

of dental prosthesis versed in all the secrets of the manufacture of modern appliances for the setting and retention of fractured maxillary bones, such as may be found to-day in the two Canadian hospitals of St. Cloud and Joinville. (*).

RESTORATIVE PROTHESIS.

Restorative prosthesis is divided into *external* restorative prosthesis and *internal* restorative prosthesis. The latter consists of appliances used to replace missing portions of bone and which are left permanently in place and imbedded in living tissue.

EXTERNAL RESTORATIVE PROTHESIS.

External Restorative Prosthesis, as the name implies, is the art:

1o. Of restoring to their original shape such portions of the face as have been deformed by wounds, surgical intervention, and faulty formation of cicatricial tissue.

2o. Of temporarily consolidating a broken lower maxillary for the correction of faulty consolidation or to make use of it as a frame-work for plastic surgery.

3o. Of the combined restoration of lost bone tissue along with all or some of the teeth.

4o. Of plastic artificial restoration of parts of the face, nose, ears, lips, etc.

REDUCTION OF CICATRICIAL TISSUE.

Although it is always preferable that the intervention of the prosthesis should come in conjunction with that of the surgeon, it will be found that, in practice, hundreds and thousands of cases will come under his notice only after the healing process is almost completed. On the arrival of such cases at the base hospital it is found that further surgical intervention in combination with prosthetic intervention is essential if the patient is not to be maimed or disfigured for life.

The reduction of cicatricial tissue may then be obtained through *bloodless* or *prosthetic reduction*, or, again, by the help of *surgico-prosthetic reduction*.

Bloodless reduction can be obtained by using special pressure-giving appliances which tend to stretch the newly formed tissue and remold it to its proper shape. The nature of the pressure which should be used is indicated by the case in hand, and one may choose one of the following: pressure by weight,

(*) These Canadian hospitals are French-Canadian units organized by Laval University, and were handed over to the French Government by the Canadian authorities to help care for French wounded soldiers. The restorative prosthesis departments in both of them is taken care of by professors of the Paris Dental School, all other members of the staff being Laval graduates.

pressure by volume, pressure by springs, and pressure by superimposed vulcanite plates.

In the *surgico-prosthetic* reduction of cicatricial tissue the prothesist is called upon to construct appliances around which the plastic surgeon will stretch and re-shape the deformed tissue. These appliances may be totally removable, or only partly so with a possible gradual increase of volume.

TEMPORARY ANTE-OPERATIVE SQUELLETTIC PROTHESIS OF THE LOWER MAXILLARY BONE.

In a great many cases, fractures of the lower maxillary will leave after them imperfections, more or less important, which may call for the re-intervention of both surgeon and prothesist. Again, the prosthetic intervention may be *bloodless* or *surgical*. Faulty consolidation may be corrected *bloodlessly* by the aid of ordinary orthodontia appliances: splints, jacks, rods, etc. Appliances, on the other hand, which are used as mere auxiliaries for the intervention of the plastic surgeon are of two kinds: *removable* and *movo-permanent*. The removable kind are held in place by the ordinary means of clasps, bands, etc., whereas the *movo-permanent* appliances are of a dual nature: one part being attached to the fragments of the broken bone, and the other, made of vulcanite, is detachable and may be modified at will.

PERMANENT COMBINED SQUELLETTIC AND DENTAL RESTORATIONS.

Appliances for these are of three classes: *Removable*, *movo-permanent*, and *permanent*. The removable squelletic restoration apparatus are made of rubber or light metal, and are more or less bulky. They are used to replace missing parts of the maxillary bones and soft tissue. Few of them are of very recent design, and they are built on the old lines of cleft-palate obturators. Of the *movo-permanent* double appliances, one part is permanently attached to the maxillary bone and supports the other which is attached to it.

Permanent restoration is obtained by modified bridge work cemented to the teeth.

PLASTIC PROTHESIS.

It is an acknowledged fact that the proportion of soldiers wounded in the head, face and neck is much greater in this war than any other war in history. During the first year of the war the number of disabled men, disfigured by lesions of the tissues of the face were so numerous, in French cities, that the morale of the army and the people were notably affected by them.

Thousands of men going through the streets with missing noses, ears, cheeks or lips, became a nightmare. Something had to be quickly done and a remedy to be found. French genius and French imagination were called upon to solve this new problem, and they proved equal to the task. The unfortunate men were first asked to keep away from the pitying gaze of the public; this new sacrifice they all willingly acceded to, for the welfare and salvation of their beloved France.

The intervention of the plastic surgeon and the dental prothesists was called for and given. In a large proportion of cases the plastic surgeon could do little, and the prothesist was left to his own resources. Old methods of facial restoration in wax or rubber were clumsy, and slow of construction. Fortunately, just previous to the war a new mode of facial prothesis had been discovered, called the "Henning Process." It had been, at the beginning of 1914, presented to the Societe d'Odontologie of Paris by Dr. Warnekross. Dr. Pont, of Lyons, had also, on April 7th, 1914, presented to the same society, through Dr. P. Martinier, the report of a case treated by him by the same system.

The material used is a plastic composition of which your essayist has not been able, but soon hopes, to get the formula.

It has the consistency and even the feel of human flesh. It can be easily melted and poured into a mold, which remains intact, so that the artificial nose or ear may be reproduced indefinitely. It is permanently colored so as to resemble human flesh in a most wonderful way, and as it is very light it can be attached to the skin with the same ease and the same adhesive material as the artificial beards used by actors or detectives.

INTERNAL PROTHESIS.

Internal prothesis is the study of appliances which are attached permanently to the bone and which are destined to be covered with living tissue.

This field of prothesis science is still in the experimental stage, and would call for a paper longer than this essay, which has already overtaxed your patience and which your essayist hastens to conclude, begging your indulgence for its dryness and many limitations. If it can be found of use by dental teachers in outlining a course of war prothesis to help future members of the American Dental Army Corps in their task of relieving human suffering, he will be more than amply repaid for his work and his trouble.

MOUTH INFECTION AS IT AFFECTS THE GENERAL DENTAL PRACTITIONER

M. H. GARVIN, D.D.S., Winnipeg, Canada.

Read before the Canadian Dental Association, Montreal.

The men of to-day in the dental profession who really think, believe that in future, they, as the guardians of the health of the human mouth, must play a larger role in solving community problems. They must have a larger and broader vision of what the public have a right to expect of them.

This means, for the dental student, a higher preliminary qualification. It means that there must be a closer association between medical and dental students during their college course, and later in the pursuit of their professions. The dentist must have a broader knowledge of general pathology, bacteriology and allied subjects in order to even comprehend the possibilities of his work.

The average practitioner, even though he is only a casual observer, will be impressed with the importance of the following statement: "The biggest problem in dentistry to-day is the root canal problem." He will be informed that to use arsenic and irritating drugs, such as formalin, in a tooth, is an unpardonable crime. Also, that in treating a tooth it is necessary to secure a roentgenogram before beginning, when half finished and when operation is completed, in fact that all treated teeth should be radiographed. Again he will be told, that from forty to eighty, yes, even ninety per cent. of all treated teeth show signs of apical infection after a lapse of say one year or longer, and he might even infer that the remainder would show an infected area if the roentgenogram were taken from a different angle, or that even if it didn't show in pictures taken from several angles, that a granuloma might be there of such density as to be indistinguishable in the roentgenogram. Among other things he will be told, that there are fewer alveolar abscesses in the poorer classes than in the middle and wealthy classes; that only ten per cent. of all dentists are capable of treating root canals, and that only ten per cent. of the people can afford this specialized treatment; that if a root canal is not filled to the apex or cannot be so filled, the tooth should be extracted at once. Further, he will hear it stated, that if the root filling does not pass through the apex of the root encapsulating it, that focal infection will result; that regeneration of the tissue beyond the apex never occurs where the root canal filling does not pass

through the apex. On the other hand, he will be told that to force a material through the apex that is subject to variation in size due to powers of expansion or contraction, or to use a solution that becomes somewhat porous when the solvent disappears merely courts disaster.

Then we have the problems associated with pyorrhea as to its being caused by or causing alveolar abscesses at the apices of teeth, to say nothing of the more common and accepted theories as to its cause and effect.

Above all these theories in importance, is the one so cleverly and so beautifully worked out by Dr. E. C. Rosenow of the Mayo Clinic, that a local focus of infection at any point in the body may cause a lesion in some other part of the body, dependent in part upon the elective localization of bacteria.

Portentous problems confront us and we realize how essential it is to solve them. The writer has personally heard one of the greatest living medical authorities on infection state the following before a group of medical men: "You know the dentist just takes a little cotton, wraps it on a broach with his fingers, and shoves it down the root canal. He doesn't know any better." However, such statements in light of the evidence at hand are not to be wondered at. On the other hand the writer would unhesitatingly condemn the spirit shown by many men in our own dental profession, who, having attained a little knowledge "which has made them mad," will talk in public of the culpability of our brother dentists for not treating a root canal in the way they think it should be treated, in tearing off beautiful bridgework in the mouth of a confrere's patient because, according to the roentgenogram taken by them, the root canal did not appear to be filled quite to the apex or perchance through the apex, without the slightest effort being made to protect the brother practitioner. With such seeds being sown broadcast to-day, many will certainly fall in fertile soil rather than by the wayside, and will surely bring forth fruit—a harvest of doubt and suspicion of our methods as dentists in the minds of the public generally. If it is necessary to use these methods in order to elevate the dental profession, it is most unfortunate. We believe that the same ends could be obtained in a far nobler way and with much less injury to the dignity and standards of our profession.

Hearing their controversies, some of which have been hinted at in the preceding paragraph, and realizing the seriousness of the situation, particularly from the viewpoint of

the general practitioner in dentistry, the work outlined in this paper was undertaken. As the radiographic work was done between April 1st and June 10th, 1916, and the root resection work was done between December 1st, 1915 and June 10th, 1916, the conclusions are not based upon as many cases as might be desired.

The radiographic work was undertaken with this thought in mind, that every patient coming to the office should have briefly explained to them the theory of focal infection, and be advised to submit to a radiographic examination, which involved the testing of all teeth as to vitality and the radiographing of all non-vital teeth. In following this plan we were impressed with these facts:

1. That statistics taken in a hospital would differ materially from those compiled in a dental office.
2. That statistics taken in the office of a specialist who sees a large number of referred cases having already constitutional disorders, would differ from those compiled in the average dental office.
3. That in the average dental office at the present time, it is difficult to get all healthy patients to submit to such an examination, and in our case a small percentage of healthy people refused. It was an easy matter to convince those who had any suggestion of a systemic disorder.
4. That the percentage of apical infection existing in ordinarily healthy individuals is much less than has been generally quoted, although serious enough to demand most careful consideration.

In 355 teeth radiographed, we could find no apical involvement in 246 cases or 69.2 per cent., 22 cases or 6 per cent. were doubtful, and 87 cases or 24.5 per cent. showed definite rarefied areas. None of these 355 cases had fistulas or any definite indication that infection did or did not exist at the apices; 14 per cent. of these 355 teeth had the canals filled practically to the apex, and of these 28 per cent. showed abnormal apical conditions.

Of these 355 cases we had history records of 110. All of the 110 cases were treated longer than one year previous to being radiographed, and from that up to twelve years. We could find no rarefied areas at the apices of 90 of these cases, or 81.8 per cent. Seven cases were doubtful and 13 showed definite areas, or 20 cases in all, being 18.1 per cent. Of the 90 cases marked O.K. two had had dead pulps, 53 were

devitalized with arsenic, 24 were devitalized with cocaine, and the pulps were removed from eleven cases by conductive anæsthesia.

From an analysis of the 20 cases marked infected or questionable the following facts were obvious. One was a lower molar devitalized with arsenic twelve years ago, the roots filled, and the cavity filled with amalgam. Six had had dead pulps to begin with. Thirteen, with one exception, were in the mouths of patients suffering from a severe type of pyorrhea. Five of these thirteen cases had shell crowns on, and the roots devitalized with arsenic. Six had dowel crowns, four of the roots being devitalized with arsenic and two with cocaine. Two had inlays, with a post running into the root, being part of a pyorrhea splint, one root being devitalized with arsenic and one with cocaine.

We are impressed with the fact, that in this group of 110 cases, only one tooth that had been filled with an ordinary filling over the root filling showed visible signs of infection. As this filling had been repaired from time to time during the twelve years of its existence, it is quite possible that infection had gained entrance through a later cavity some years after the original root filling was inserted.

We further note that over half of these teeth were devitalized with arsenic, and conclude, that with proper technique, the use of arsenic in devitalization is not an important factor in the production of apical infection. At least we can go this far at present and state that we have been unable to detect any clinical evidence from the human mouth that would justify us in shelving this drug which has served us in the past, is still serving us to some extent, and may be of service in the future.

Further, most of these roots were filled with an antiseptic paste containing formalin, which paste would harden very soon, with a tendency to dry and harden any organic matter in the tubules of the dentine. In many of the larger roots a gutta percha cone was forced down into the paste. These roots were filled with the paste as near to the apex as possible, but not through the apex if it could be avoided. In a great many cases the gutta percha cone, when used, did not reach more than three-quarters of the way down the root canal. We endeavored to place these canals in such shape that nature could make the necessary repair. We believe that nature's repair of the apical tissues in a treated tooth is much preferable to any mechanical repair on our part. We believe that it is not entirely a mechanical problem, but rather a physio-

logical problem. We believe that it is practically impossible for the average dentist to absolutely fill even a majority of root canals from a mechanical standpoint.

The use of formalin has been greatly condemned in root canal work, particularly in root canal fillings. In our work thus far we have found nothing to justify this condemnation. We find no evidence of soreness of the pericementum in practically every case, as against considerable soreness in the use of substances like choloroform and resin preparations. The formalin, outside of its antiseptic qualities, seems to have a stimulating effect on the surrounding tissue which lends itself to repair by nature's processes.

We admit, that to use this drug in such strength as to destroy or greatly weaken the tissues at the apex, or beyond the apex, would be disastrous, but we believe that a milder solution acts beneficially, and that it stimulates the surrounding tissues to bony repair, walling off the dentine, which, in a treated state, is not a condition to be desired even at best.

In treating these teeth we tried to perform a clean operation. We endeavored to keep the saliva out of the canal at all times. We sterilized all instruments used in the operation. We washed our hands before wrapping cotton on the broaches, and insisted on the assistant doing so. Then we relied on the antiseptic nature of our root filling counteracting any bacteria which might have gained entrance, through the fact, that our cotton, after being wrapped on a broach, was necessarily not aseptic. In other words we tried to do a clean operation, not an aseptic one, and we are not yet convinced that we failed in bringing about a satisfactory condition. We submit that for those who believe in a neutral aseptic root filling, there is only one course open, that is, to perform an aseptic operation, perfect in every detail. Unless it can be proven that an antiseptic root filling is objectionable, it would seem that a clean operation would meet the requirements, and if so it will mean much to the average dentist, and mean much to the public from a financial standpoint.

Out of eight dead pulps only two apparently recovered. Six did not. In the treatment of these conditions ionization was not attempted, so we cannot pass judgment on its efficacy, but we believe that teeth with dead pulps or badly infected pulps should be at once extracted, unless the operator is prepared to take exceptional precautions and be prepared to radiograph the case frequently, with an effort to prove or disprove the efficacy of his treatment. In cases of systemic in-

volvement this chance should not be taken, but the tooth should be extracted.

In the thirteen cases referred to we do not consider it a significant fact that a large majority of these teeth were devitalized with arsenic, for the reason that these patients were pyorrhea cases with particularly sensitive teeth, and it had been our practice, at that time to use arsenic almost exclusively in the pulp treatment of this type of case. The shell crowns, five in number, may have played some part in causing inflammatory and infective conditions at the gingival margin, and in any case should hereafter be condemned in most cases, as the cast jacket crown is evidently so superior. The dowel crowns, six in number, may have played some part in bringing about disaster, either through infection permeating the cement substance, or probably due to infection getting in to the canal and permeating the root filling during the fitting or cementing of the crown, the same applying to the other two cases which were inlay abutments. We believe that in these thirteen cases the chief factor was the pyorrhea condition which existed previous to the treatment of the teeth referred to. We cannot say just what part alveolar abscesses, which may have existed at the apices of other treated teeth in the same mouth previous to commencing our treatment, may have had to do with causing the pyorrhea condition in these patients. We believe that a more careful and intelligent diagnosis of pyorrhea cases, always with the aid of the X-ray, will eliminate much of the trouble found in this class.

In treating the rarefied area at the apices, we extracted the teeth and curetted the abscessed area in cases where the involvement was very extensive, or where, on account of systemic conditions, a more conservative treatment was contraindicated. We also extracted in cases where there was a direct connection to the mouth from one of these areas through a pyorrhea pocket, believing that such cases are incurable even though the tooth is not loose at the time. In a few cases the roots were retreated and refilled with an antiseptic root filling, but in most cases root tip resection was resorted to, the area thoroughly curetted and an amalgam filling inserted in the apical end of the root canal. Silver amalgam was used for this purpose, and was packed tightly into the cavity, not only to seal the canal, but to avoid the exposure of a large area of devitalized dentine. In most cases the roots were retreated and refilled before performing the resection, but in some cases this was not done where it meant

removing a bridge. In these cases we relied on the amalgam filling to wall off the infection, but to date insufficient time has elapsed to pass judgment on this technique. We have resected the root tips of 112 teeth in 83 patients. Ninety-five of these teeth had an amalgam filling inserted in the apex and seventeen had not.

Recently, from 15 of these root resections, we took cultures planting some directly in blood agar, and some in bouillon, and from the bouillon after twenty-four hours' growth, transplanted to blood agar with the following result:

Streptococcus	three cases
Streptococcus and staphylococcus ..	one case
Streptococcus and bacillus	one case
Staphylococcus	four cases
Diplococcus	one case
Bacillus	two cases
No growth	seven cases

This part of the work has not been carried far enough to draw any conclusions. In cases where we obtained no growth we have to remember that many forms of bacteria will not grow in any ordinary artificial media. Then it is quite possible, that in these cases, the culture was obtained from the centre of an area where it might be sterile, while a marked growth might have resulted if the culture had been obtained from the margins of the area. We did not find the streptococcus in a majority of these cases, but that does not mean they were not there, but that they did not grow, or were grown out, in the culture media. Much importance, and obviously not too much, has been placed upon the presence of the streptococcus in these cases and its relation to endocarditis, arthritis and similar conditions. We believe also that a further study should be made of the presence of other forms of bacteria and their relation to systemic disorders, as, for instance, the staphylococcus in certain skin eruptions. We have had one case of this type clear up after the extraction of one tooth, and the root tip resection of two teeth. We have had several cases of arthritis clear up entirely, after similar treatment, also two cases of heart lesion greatly improve.

Card 1 shows a series of examples of rarefaction and infection at the apices of non-vital teeth. No fistula existed in any case except A, and then was only discovered in this case after the roentgenogram was taken, it being very obscure. None of these conditions were causing any pain, and their existence was unknown to the patient. B.—abscess under first

molar. C.—abscesses over central and lateral. D.—abscess over second bicuspid with dead pulp, in boy twelve years old. E.—abscess over first bicuspid. F.—abscess over lateral with



D176



C234B



G252



K224



B227



F59



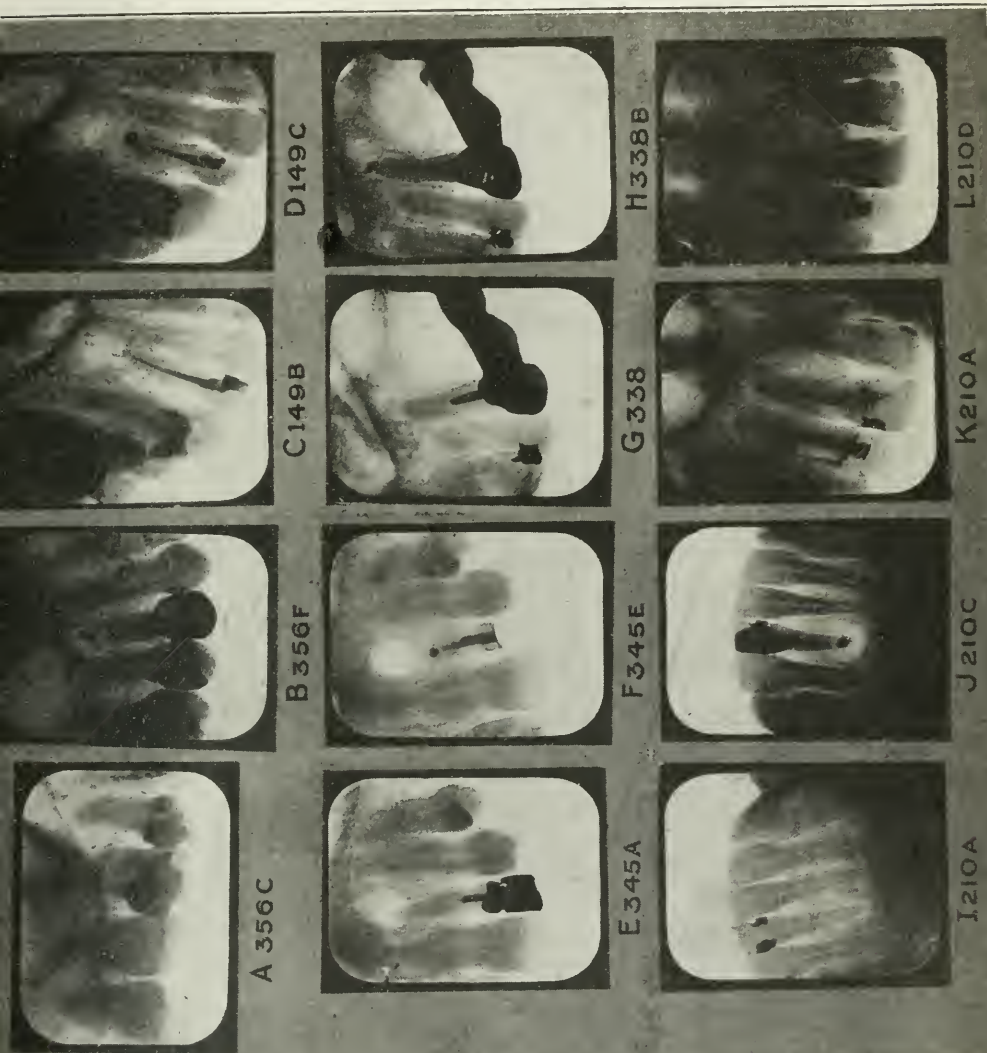
A236B



E152



dead pulp. G.—abscesses over central, lateral and bicuspid. H. and J. from same patient with all incisors involved. K.—abscess under second molar, and abscess under root, mesial to it. With such a large series of such cases as these presenting



CARD II.

themselves constantly, and as we know of no other way to locate them other than with the X-ray, we believe that the general practice of radiographing or having radiographed every non-vital tooth in every patient's mouth should be adopted, without delay, by every dentist who is endeavoring

to give his patients the most efficient service of which he is capable.

Card 2 shows a series of cases before and after operation.



CARD III.

where the root canals have been retreated and refilled and root resection performed, and with amalgam placed in the apices. B. shows both roots of the upper first bicuspid filled

with amalgam. E. is interesting on account of the fact that this patient suffered for years from arthritis, and we hope for improvement now that this infected area has been removed. F. after operation. J. shows placing of amalgam in lower central, after dead pulp shown in I. has been treated. C., G., K. shows cases before operation, and D., H., L. after operation.

Card 3 shows a series of cases before and after operation, where the root canals have not been retreated before performing root resection. In these cases we hope to have walled off infection by our amalgam filling, tightly packed into the canal. B. is a lower second bicuspid. D. shows the upper incisors. F. upper central and lateral. H. upper bicuspids. J. upper central and lateral. L. upper bicuspid. We can not say at the present time whether or not this procedure is justifiable.

Card 4. Roentgenograms A.-F. inclusive, show extensive trouble in the mouth of a single patient. Roentgenograms G.-K. show extensive trouble in the mouth of another patient.

Neither patient was aware of the existence of these conditions. In the case of the first patient, A. shows abscesses over left lateral and central and B. the treatment. C. shows abscesses over right lateral and central and D. the treatment. E. shows abscesses over upper second molar with dead pulp, and over buccal root of third molar, both of which teeth were extracted. F. shows abscess over upper second bicuspid which had been treated and presence of third molar root, both of which were extracted. In the case of the second patient, G. shows abscess over right lateral, and H. the treatment. I. shows extensive abscesses over lateral and cuspid, and J. the treatment. K. shows a very extensive area under lower second bicuspid and first molar, also abscess under second molar root, all of which were extracted and the area curetted. These teeth were not at all loose, but a fistula was finally discovered on the lingual aspect, well down in the floor of the mouth. From the history, we learn that these teeth were treated for dead pulps three years previously and have given no pain since.

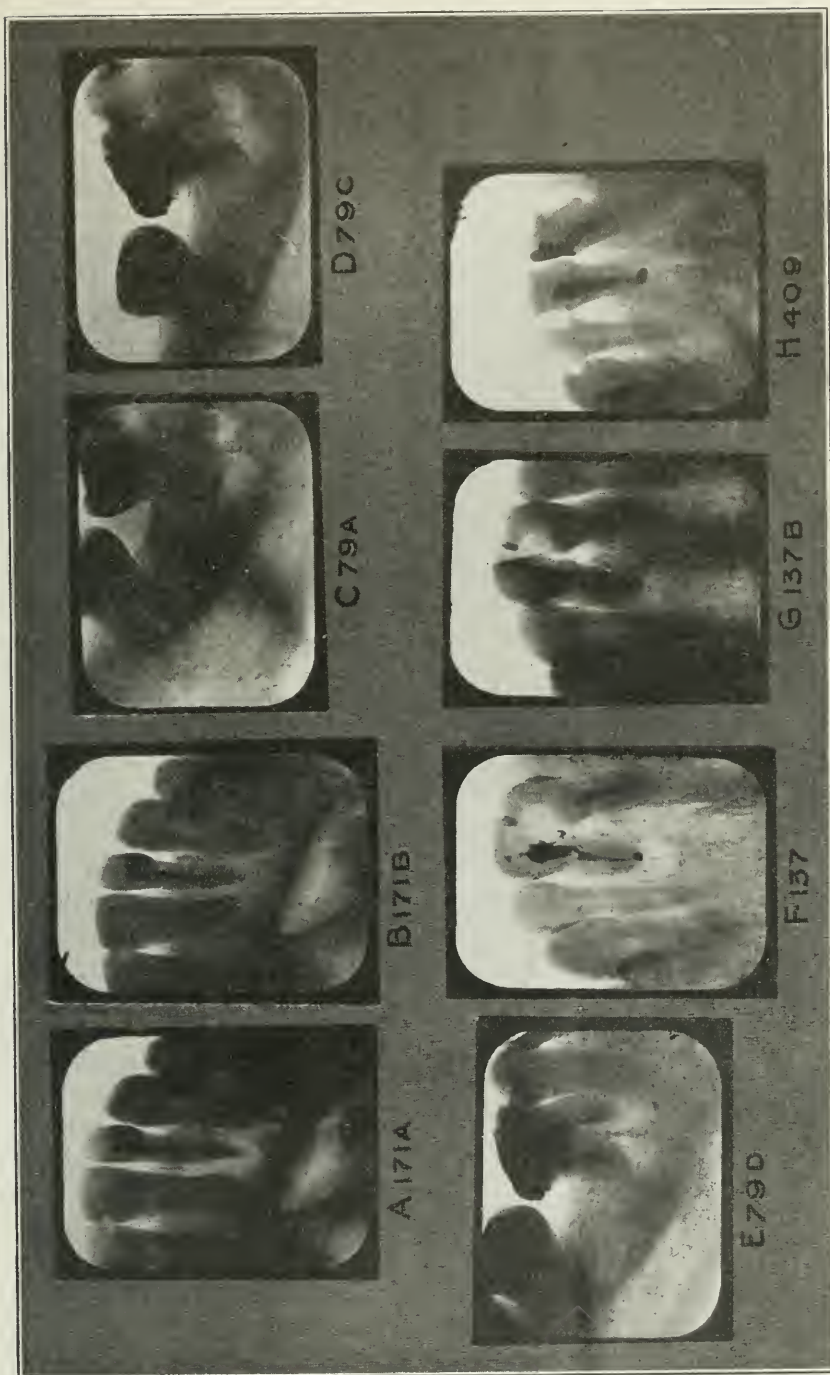
Card 5. A. and B. show upper lateral, before, and three months after treatment. This patient was a young woman about twenty-five years of age and healthy. She presented herself for treatment, complaining of a soft spot in palate which sometimes swelled up, and then would subside, with no particular pain. The roentgenogram showed an abscess over

the lateral tooth. The root canal of this tooth was retreated and refilled, using an antiseptic root filling with formalin as one of the ingredients. All local symptoms disappeared. B. was taken three months after completing operation, and shows



CARD IV.

the abscess cavity well filled in, and, we believe, with bone. We believe this type of treatment is indicated in young patients who are robust, and where there are no systemic involvements. It would also be necessary to radiograph these



CARD V.

cases from time to time to make sure of the result. C. shows an abscess at the apex of both roots of a lower left first molar, in man 38 years old. The tooth has been treated but the roots not filled. There was a slight swelling in the gum but no pain and no fistula. D. shows the roots refilled and the resection performed. We were unable to use amalgam in this case. E. shows the case three and one-half months after operation, with considerable bony regeneration. F. shows upper central after operation, in woman 35 years of age. G. shows the same case four months after operation, with almost complete regeneration of bone. H. shows regeneration of bone over central root five months after operation. A picture of this case immediately following the operation was not taken.

Card 6. A. shows abscessed area with direct connection to gingival margin, and was extracted, although not at all loose. To attempt resection of this type of case is useless, as one meets with slight success. B. shows abscess at apex of lower central, the tooth being retained by a pyorrhea splint. D. shows the difficulty of keeping the amalgam in the cavity where it belongs, but we do not believe this condition will interfere with the regeneration of the bony structure. E. shows a very extensive infected area of a granuloma type, and difficult to diagnose. F. shows condition after operation, and G. the condition seven weeks later. This case is doubtful on account of the small amount of process existing between the central and lateral.

Card 7. A. shows root filling passing through side of root into abscess, and B. same case after operation. No amalgam was used in this case, but we have concluded since, that it should have been used. C. shows large involvement around lower molar. This patient was a nurse twenty-five years of age, and had been suffering from inflammatory rheumatism for several weeks. As the case was not clearing up the physician sent her to us for a mouth examination. We discovered the large abscess shown in C., and the smaller one over the first molar in D. These teeth were removed, and the patient recovered almost at once, and has had no recurrence in two months. E. shows loss of bony structure and infection in pyorrhea case.

An attempt was made to treat molar shown in F. without radiographing. This picture shows measurement wires in position. At this stage in the treatment an acute condition started, the tooth was radiographed and then extracted. G.



CARD VI.

shows a root filling forced through the apical foramen of a tooth. H. shows definite involvement under both molars. These teeth were treated for dead pulps five years ago, and have given no pain since. We believe that while these



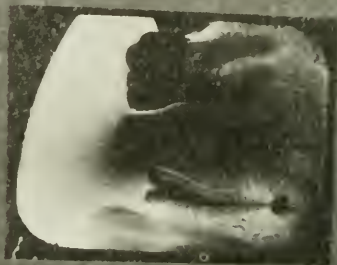
D 214A



H 324



C 214B



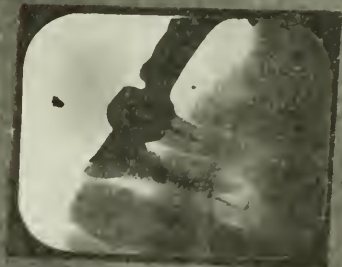
G 207A



B 241C



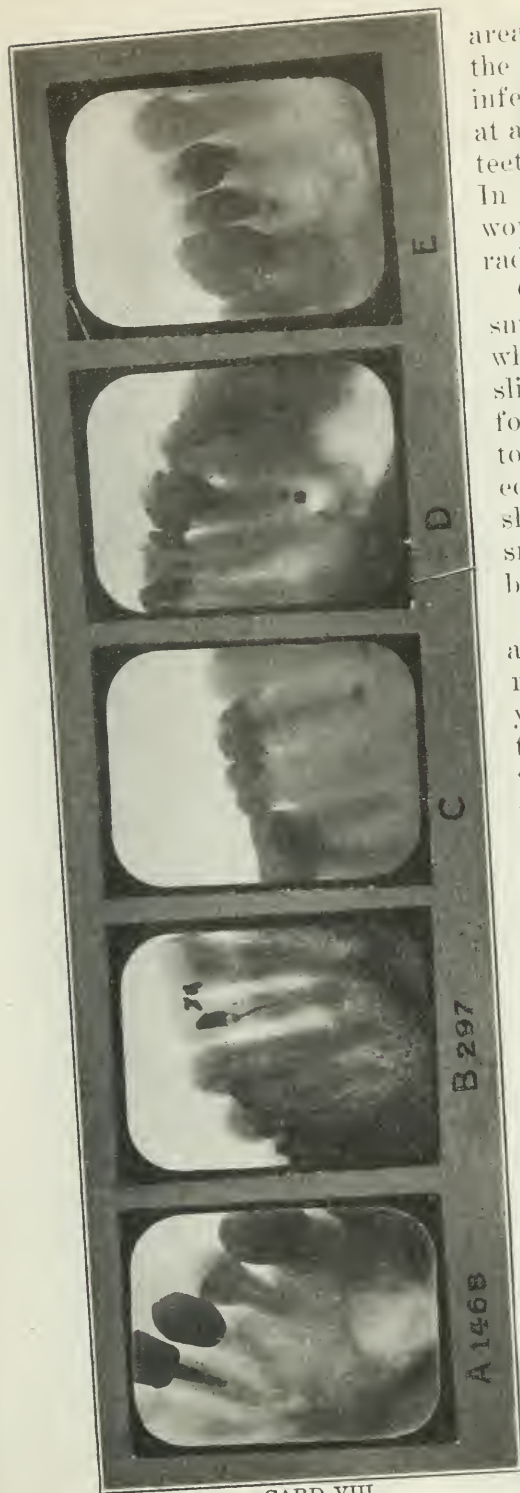
F



A 241



E 328C



CARD VIII.

areas may be sterile that the chances are they are infected, or may become so at any time, and that these teeth should be extracted. In this case the patient would not consent to the radical operation.

Card 8. A. shows a very small area over the cuspid which had never given the slightest pain. In performing this resection we took a culture and obtained a pure streptococcus, showing no matter how small the area it must not be overlooked.

B. shows a lateral root apparently half filled. This root was treated eight years ago, and we believe that nature has walled in this dentine and filling so that it is far from probable that any infection will ever develop at the apex on account of this tooth having been treated. A slight exostosis is noticeable, and is usually noticeable in these cases. There are such a large number of these cases that we are convinced that the question of focal infection does not depend on whether the canal is, from a mechanical standpoint, filled to the apex or through the apex. C. shows a lower left first bicuspid after resection, with amalgam filling in position. D., amalgam

filling in both roots of an upper first bicuspid, and E., an upper second bicuspid.

Conclusions.

1. Every dentist should insist on radiographing or having radiographed all non-vital teeth in making his preliminary examination of the patient.

2. Under present conditions all teeth with dead pulps or badly infected pulps, should be extracted, unless the operator is prepared to take exceptional precaution and radiograph the case frequently, and only then where there is no systemic involvement. The root tip should be resected in all cases where any rarefied area exists and amalgam placed in apex.

3. In pyorrhea cases all treated teeth should be radiographed at intervals, the interval to be determined in each individual case.

4. Where a rarefied area exists at the apex of a tooth, the root canal may be retreated and radiographed again in three months, on condition that the patient is young and healthy. If the area is large or the patient is not young, the root tip should be resected and an amalgam filling placed in the apex. We have not come to a conclusion as to whether or not the root canal must be retreated in every case. It would certainly be preferable. In cases where there is any extensive systemic involvement the tooth should be extracted.

5. In root canal treatment the aim must be to so improve the condition that nature can make the repair.

6. That if a neutral aseptic root filling is used, an aseptic root canal operation must be performed. We can find nothing to condemn the use of an antiseptic root filling in which case a clean root canal operation, not necessarily aseptic may be sufficient.

7. We can find nothing to convince us, in the cases thus far examined that with proper technique, it is wrong to ever use arsenic in the treatment of teeth, or such drugs as formalin in weak solution in the treatment of root canals.

PRESIDENT'S ADDRESS—CANADIAN ORAL PROPHYLACTIC ASSOCIATION

A. J. McDONAGH, L.D.S., Toronto.

During the past year your executive have been active along certain lines which seemed to give the greatest promise for the good of the profession, and have, we believe, accomplished something which will be pleasing to you. We also tried to show your appreciation of the work done by Drs. Kirk, Leon Williams and C. N. Johnson, in connection with the prize essays which were awarded by the Canadian Dental Association, and for which our Association supplied the money. The method we used was the following: During the meeting in Philadelphia of the dental teachers, we presented Dr. Kirk with a barometer, which we found, through the good offices of Dr. Harold Clark, would be pleasing to him. When Dr. Leon Williams came to Toronto, we presented him with a set of Parkman's Works, and for Dr. C. N. Johnson we planned a dinner, during the Ontario Dental Convention, and the presentation of a set of The Chronicles of Canada, but as Dr. Johnson's wife was ill at the time, and he did not come to Toronto, the dinner was cancelled. Later, however, when Dr. Johnson came to Toronto, we presented him with the books.

As you know, your executive has been desirous of having research work carried on by Canadians, and having had the expression of approval from this Society, we have been trying to get the best possible arrangement we could for that purpose, consequently the committee from your executive has been endeavoring to join forces with the National Dental Association, and the work done by the National Dental Association Research Committee. We went to see Dr. Weston Price in Cleveland, and spent a few days with him, getting a line on the work they were doing, the manner in which they were doing it, and the possibilities so far as we were concerned. We made an offer to the Institute which Dr. Price was in favor of accepting, but unfortunately the National Dental Association has just lately decided to change the management, or perhaps augment the management of the Institute by placing at the head of their scientific work a new man. Therefore, until the changes are completed, they refuse to entertain our proposition. On learning this fact, we have decided to establish Research in Dental Science right here in Toronto, in one of our

own educational institutions. We have sufficient money now, we believe, to make that undertaking possible, and I am going to ask you now to form a C.O.P.A. study club to help solve some of the knotty questions which confront us, as well as to improve ourselves and increase our fund of knowledge.

We have also been able to help, as you will see by Dr. Broughton's report, numerous charitable institutions which we help every year, besides giving over one hundred dollars to the Women's Auxiliary of the Canadian Army Dental Corps.

Your executive have always felt that we should have some money laid by for emergencies, consequently we took two thousand dollars of the money in the bank and put it into the Victory War Loan, accomplishing our aforesaid object and at the same time doing a little patriotic work.

Business this year has been good, perhaps one reason which has caused it to show an improvement is that we have now a business agent, Mr. J. W. Houston, who is travelling all over Ontario, and who in his spare time details our goods in all the different towns he visits. Last year we had a profit of \$2,192.23, this year just ended we have a profit of \$3,536.32, showing a net gain for the year of \$1,344.09, which is very satisfactory. The only unsatisfactory note which I intend to express in this connection is that it has been necessary on account of the increase in the price of everything to increase the price of our products to the retailer.

We are glad to welcome Dr. Mallory, one of our members, back from the front. Again we have to express our sorrow that it is still necessary that several of our members are yet overseas.

As you will see by Dr. Grieve's report, your educational committee has been doing good work this year, and has taken all of that work off the shoulders of the executive, consequently I want to sincerely thank them. I also wish to thank all the members of the Society and hundreds of the dentists who are not members of the Society who so faithfully recommend the goods of the Association to their patients. I also wish to thank the members of the executive whose loyalty and wholeheartedness make it possible to carry on the work we are doing.

Dental Societies

PROCEEDINGS OF THE ANNUAL GENERAL MEETING AND FINANCIAL STATEMENT OF THE CANADIAN ORAL PROPHYLACTIC ASSOCIATION

The annual general meeting of the Canadian Oral Prophylactic Association was held at the Walker House, Toronto, on Monday, January 21st, 1918.

The president, Dr. A. J. McDonagh, occupied the chair.

The annual statement of the business of the Association for the year 1917, duly certified by the auditors, was presented by the secretary-treasurer.

Much satisfaction was expressed by the members that, in spite of the necessary increase in prices of both Hutax brushes and toothpaste and powder, a substantial increase in profits was shown.

Total receipts for 1917	\$5,009.887
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Business expenses	1,473.55
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Profit for year 1917	\$3,536.32
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Cash in bank, Dec. 31st, 1917	5,718.49
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The sum of \$1,437.37 was expended during the year for charitable and educational purposes, divided as follows:

Donations to hospitals, homes, etc.	\$329.49
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Donations to No. 2 Division C.A.D.C.	50.00
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Expenses of lecture and concert to soldiers	
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at Exhibition Camp	23.00
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Donation of brushes to colleges	97.74
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Donation to Women's Auxiliary C.A.D.C. ..	103.25
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Expenses connected with Research Competi-	
tion	203.89

Exhibit at O.D.A. Convention	62.62
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Lantern slide lectures	45.00
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Pamphlets, military cards, dental cards, etc.	522.38
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The president's report was presented by Dr. McDonagh, and the Educational Committee report by Dr. H. E. Eaton.

The election of directors for the ensuing year resulted in the unanimous re-election of Doctors A. J. McDonagh, J. Frank Adams, A. E. Webster, W. Cecil Trotter, and A. J. Broughton.

Educational Committee—Doctors H. E. Eaton, Geo. W. Grieve, W. Black, B. Nicholls, E. L. Gausby, C. E. Scott, Capt. Semple.

Auditors—Doctors Bruce Nicholls and Edgar W. Paul.

It was decided to adjourn the meeting to the call of the president, the board being instructed to secure some outstanding member of the profession to give an address, and an invitation be extended to all dentists to attend.

A. J. BROUGHTON, Secretary-Treasurer.

ONTARIO DENTAL SOCIETY

“WISE” IS HARDLY THE WORD.

If your patients knew that you were invited to attend the 1918 Ontario Dental Society Post-Graduate Convention, and—

If you knew your patients expected you to be familiar with the best and most modern methods of practice, and that—

They would remember, the next time they sat in your chair, should you fail to accept the invitation—

Would you not consider it wise to be present?

AGAIN,

Have you considered the great work the Ontario Dental Society is doing, through their Oral Hygiene Committee, for the welfare of the children in the schools.

Would you not like to tell your patients that you have a hand in this, that you are a member of this Society?

FURTHERMORE,

The meeting this year is a four days Post-Graduate Course from April 29th to May 2nd.

The lecturers are Dr. C. N. Johnson, Dr. Arthur E. Smith of Chicago, Dean Webster of Toronto, Dr. Vogt of the Mellon Institute, Major Greene of Ottawa.

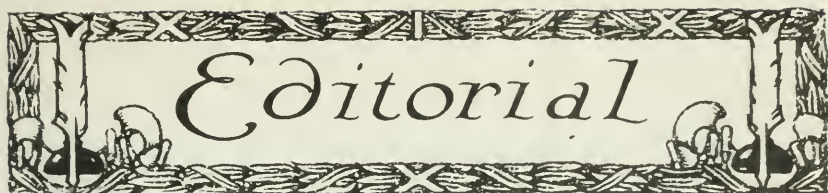
The exhibits will, as heretofore, be complete in every detail. The place of the meeting will be the Jenkins Building, Grenville Street, just off Yonge and College, Toronto.

From all viewpoints it will pay you to come. The inspiration as well as the information might mark the turning point, upward, in your career.

J. P. MacLACHLAN,

ARTHUR W. ELLIS,

Publicity Committee, Ontario Dental Society.



Editorial

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VOL. XXX.

TORONTO, MARCH 15, 1918.

No. 3.

DIRECT CONTROL OF PROFESSIONS BY LEGISLATURES

The following resolution was passed at a recent meeting of the Next of Kin Association of Calgary: "Resolved that the Great War Next of Kin Association request the Legislature of Alberta to take action to assume all powers of regulation of the medical, dental and pharmaceutical professions which have been accorded to the provincial associations of members of these professions under their provincial charters." In the report accompanying the resolution it appears that a graduate nurse introduced the resolution, and the belief was expressed that the public were not adequately protected from incompetence because of medical ethics (so-called). There is no good reason why nursing, veterinary, theology, engineering, architecture, public health, music, art and agriculture, in fact, all education, should not come under the direct control of the Government. If this war goes on long enough, the Allies will realize that all the resources of the nations will have to be organized. It will not be enough for the Governments, as in Canada, to direct the literary and agricultural education of the people, but they must direct all

the enterprises which influence the ideals of the people and their standards of living. The people must not be left to be preyed upon by designing individuals or groups of individuals under the guise of individual liberty, private enterprise, or the belief that governments do not know anything about education anyway. Just as great minds can be employed to conduct big enterprises for a government as for private individuals. The same sources of information for conducting the dental profession for the people are open to them as are open to the profession.

It is an anomolous thing for the people of a country to direct the public school education and not take charge of professional education. What kind of democracy is it that gives a group of self-interested persons charters to govern their calling in the interests of somebody else? The only reason why there is a dental act at all is because it is for the benefit of the public. The people are surely not giving into the hands of one person out of several thousands a privilege just for the benefit of that individual. The people must sooner or later govern that which is of interest to the people.

Canada, as in many other countries, has recognized that it is not in the interests of the people to allow unskilled persons to direct the education and health of the nation, in consequence there is the Educational Act, the Medical Act, the Public Health Act, the Dental Act, etc. The strange thing about this legislation is that it directs in detail the education and public health, but when it comes to medical and dental education and practice it turns it over to these groups to dictate who may enter the calling, and who may practise it, and who may not. The Government or the people have nothing to say about it. If the Government appointed or had anything to say in the appointment of the governors of these professions it would not be so bad. It is not government by commission because they do not appoint the commission. True, they dictate by charter who may be appointed, but no person can be appointed by the people for whose benefit the act was framed.

In many of the States of the Union to the south of us, and some of the Provinces of Canada, the Legislature appoints half of the directors of the profession. An unfortunate part of this method, or, in fact, the Ontario method, is that no person outside of the calling may be appointed. It would be a great advantage to have on such a professional board someone noted in another walk of life. In some states the Legislature makes the appointments from selections made by the

official Dental Society. The patronage system is the most serious charge against the legislatures having anything to do with appointments to professional boards or councils. But the answer is this, if the Legislature appoints members of such boards which do not suit the people, then the people can turn them out, but under the system in many of the Provinces in Canada, the people do not feel that they have a direct opportunity to discuss affairs of the professions because their doings do not come under review in the House from reports laid on the table, as occurs in education and other departments.

Professional education and practice is in the interests of the people and should be directed by them. All of the primary and secondary education of Canada is under direct legislation, and all universities are governed by a form of Commission Government. The provincial universities are governed by boards controlled by the Legislatures, and these boards are not all made up from the teachers or professors, neither have the teachers power to vote for a member of the board. How different is all this in professional education and government.

It is interesting to note in the discussion and as a reason for passing the resolution in question, that the public are not protected from incompetency by the medical, dental and pharmacy acts. This is certainly a new phase of the discussion for members of the Legislature. The chief argument heard from those outside of the professions is that it is a close corporation for the purpose of keeping others out and consequent opportunity to charge exorbitant fees.

No person outside of a profession knows nearly so well how incompetent members of a profession are as those inside of it, but let a member bring a charge of incompetency or want of honesty against a confrere and see what a storm is raised by the very persons in whose benefit the charge is brought. It is no part of medical ethics to protect an incompetent or dishonest member, but the trouble is that such charges should be brought by a provincial official and not by one of the same calling who is open to the charge of jealousy.

There is an undoubted incompetency in all professional callings, the chief reason being, there is no power to revoke a license once given except for a criminal offence, while, as a matter of fact, this offence may not interfere in any way with his skill. Many of the new dental acts require that a habitual drunkard may not practise dentistry. Every licentiate must register each year and pass an examination at the end of every five-year period. No licentiate may quit practice

for a year or more without passing an examination before taking out a new license. These are among the means taken to safeguard the public against incompetency. All such examinations to practise should be conducted by the Government, and not be in the hands of those interested in either preventing others to enter or allowing confreres to pass. The practice of all callings having to do with health must sooner or later come under the direct control of the people, and the people, through their representatives in the Legislatures, must have the opportunity to review the government and conduct of all callings which affect them. The conduct of no individual or the conduct of no group of individuals can be without interest to all other individuals.

HALIFAX NOTES

Halifax, N.S., Feb. 12th, 1918.

The disaster of December 6th, whereby a large part of the city was devastated, was terrible beyond description, but no members of the dental profession suffered serious bodily harm. All offices were more or less wrecked. Windows were demolished and some appliances were injured or destroyed, but considering conditions, the men and their families were mercifully preserved.

None did more devoted and faithful relief work in hospitals, homes or shelters than the dental surgeons. For at least one month every office was practically closed and the entire time given to the public needs. Major George K. Thomson, A.D.D.S., placed his equipment and men in charge at each military hospital and one emergency hospital.

All the Dalhousie University buildings were in a moment rendered windowless and untenable and badly damaged otherwise. Occurring so early in the day, but few students were injured.

The equipment in the dental apartments was not seriously damaged, and was at once offered for dental relief. The dental faculty offered their services. It was, however, decided that better work could be accomplished in the emergency period by assigning one or two members of the faculty to each permanent and emergency hospital, which was done, and the needs of the hour were met in a splendid way. Since the work of need and dental relief has been thoroughly organized, more or less has been required from the dental surgeons.

On February 8th, at 8 p.m., at a meeting of the Halifax Dental Society, held in the Tally-Ho Restaurant, a simple war-time supper was served in honor of Dr. R. E. Macdonald, who very soon leaves Halifax with his family for the West. The president, Dr. Dobson, and others referred to the Doctor in terms of real affection, for he has endeared himself to all who know him. Dean Woodbury, on behalf of the Society, made the presentation of a suitably engraved token of their regard. The appreciation of Dr. Macdonald was expressed in a resolution moved by Dr. F. W. Ryan, which is to be sent to the Vancouver Dental Society.

Some business was transacted. Permanent official connection was found desirable between the newly appointed Medical Relief Committee and the Dental Society of Halifax. Dr. F. W. Dobson, president, was appointed as dental representative on that committee. The executive was appointed to confer with Dr. Dobson respecting details of his work, the allotment of patients requiring relief and other matters.

Notwithstanding the general shake-up by the great disaster of December 6, the University was promptly opened after the Christmas holidays with all students in attendance. Many of the lecture rooms were totally dark at first, with only glass enough placed in the laboratories to see with. The Dental School promptly resumed its work, and is now carrying on with plenty of light and heat.

The Andrew Carnegie Commission has wired to the University that they "will consider it a privilege to make good all damage to Dalhousie University."

This is but one of hundreds of substantial evidence of sympathy and kindness to our people.

Dr. R. D. Kerr, Lindsay, has sold his practice to Dr. Nesbitt.

✧

Dr. Bright, R.C.D.S., 1917, is at the head of the Winnipeg School Dental Clinics.

✧

Drs. A. L. Bamerman, J. M. Thompson and A. A. Kenny have joined the C.A.D.C. at Winnipeg.

✧

Mrs. J. Elliot Holmes, wife of Lient.-Col. Holmes, D.D.S., Saskatoon, has been honored by the King for her services as a nurse, both in England and France.



—a simple little system, but it paid this dentist

A doctor in one of our big cities whose practice keeps him going at top speed all day, found that in the rush of preparation between patients he was letting charges slip by without noting.

This state of affairs kept up until it was so productive of loss that he simply had to instal a system of accounts or suffer the loss that resulted from a recreant memory.

Inasmuch as his one assistant received patients and aided him in the preparation for each patient, the system necessarily had to be not only simple but most economical of time.

The system that he finally installed has put an absolute check to these "slip-by" charges. Moreover, it is automatic and gives the doctor a line on the work he has done for each patient before that patient gets into the chair.


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Original Communications

MOUTH BACTERIA

W. J. GIES, M.D., New York.

Read before Canadian Oral Prophylactic Association.

Mouth bacteria I mean to discuss in a very general way, especially from the standpoint of my own acquaintance with them, and especially from the standpoint of dental decay. Of all the disorders to which we are heir it seems that dental decay strikes us most frequently and universally. In the popular mind it is one of the most disturbing disorders, and, of course, in dental practice it is perhaps the most universally frequent. What causes decay of the teeth is a practical problem, and especially, if the answer to that can be found, how can we control the cause when we discover it? I believe you are familiar with the current conception regarding the factors that induce decay of the teeth. Let me repeat them simply to be sure we have a working basis to proceed upon. The current theory would, condensed, very briefly put it this way: The acid substance made on tooth surface repeatedly at a particular point causes solution of the enamel at that point, exposing the dentin, with solution of the dentin likewise, and exposure of the pulp likewise, if the process goes on long enough. The acid which is made at a given point repeatedly, which dissolves the enamel and penetrates, is made from carbohydrate by bacteria, the bacteria being invariably and always present everywhere in the mouth, the carbohydrate from which the destructive acid is made being localized at points where the solution occurs. I have condensed that, I believe, in the fewest possible terms. Acid as the destructive agent, bacteria the factors that make the acid, carbohydrate the substance that yields the acid, and what must always be kept in mind in running through this conception is localization and repeated production at the given point through a long period of time.

Now, if we know how to manage the bacteria, how to control the bacteria, how to identify them and destroy them, and so on; in other words, if we can focus our attention on the bacteria as the scrappers in a first line of trenches, if we can go over the top and clean up there, the rest of the advance is easy. What are the facts in this case? There is no cavity in the body exposed to the air repeatedly or intermittently that has so many bacteria in it constantly. There is no fluid that passes from the body ordinarily that contains so many bacteria as the saliva, and it is a fact that practically any kind of organism that may be found anywhere may be found in the mouth. It is a further fact that while that is true, some bacteria cannot grow in the mouth, and some bacteria grow there preferentially. There are two reasons why some bacteria cannot grow in the mouth, as far as we know. One reason is that the saliva fails to contain nourishing material of a certain kind or necessary kind for them. They may go into the mouth, mix with the saliva, stick to the teeth, but will die because they are starving. Another kind, or group of kinds, will fail to grow because there is something in the saliva that is detrimental to them. Others will grow, as I say, because there is everything they need in the saliva, and the conditions are fine for their nourishment. So that we can think of oral bacteria as, first of all, almost unlimited in kind and character, so far as appearance and occurrence is concerned, but some will grow right along under all conditions, and there are others that will not. Those that die off in the mouth; those that starve there or are killed, are more or less immaterial from our standpoint. They may be very bad if swallowed, or if they pass through broken surfaces they may introduce disorders of other types than those we are concerned about, but only those types that grow in the mouth can have anything to do with causation of decay. We have studied in this period of research for the Dental Society in New York as thoroughly as possible two general questions: What are the general kinds of organisms roaming around frequently, dangerously and damagingly in the mouth, ignoring in our work those that were plainly of no importance by reason of death or general destruction, by impairment of vigor or what reason, according to what has happened to have been the case; and we have found at least three types of bacteria there that are conspicuous. First of all, the well-known types of streptococci. Streptococci viridin is one of the common types; and the streptococcus forms in general, including the type responsible for pneumonia, are

very conspicuous in the mouth, in the ordinary deposits of all kinds, in the food debris mixtures, hard tartar, soft tartar, on the gums, on the teeth, between the teeth, on the tongue, and everywhere; and they grow all over the dental and oral surfaces by billions and trillions; they grow very luxuriantly, and no matter how often we disinfect the mouth, no matter how frequently we put disinfectants into the mouth, no matter how effective our mouth wash may be as a bacteriacide, the fact of the matter is no sooner is it removed, and the saliva itself dilutes it and further removes it, than reinfection occurs, and it only takes a few minutes for generations to develop and restore the original population in number. Remember always that bacteria may pass from one generation to another in a few minutes, and it does not take a few days to develop a good sized bacterial family; grandfathers arrive and disappear in a period of 15 to 20 minutes in many cases, and so it is a very rapid growth. The streptococcus form is one very prominent. Then we find various types of bacteria of the so-called bacillus or rod-shaped type, and one of them is very common, significant from its name, bacillus acidophilus, an acid lover, a form that is very active in producing bacteria, and very resistant to the action of acid; and then there is another type of a globular form; and then there is the thread former, which is new, and which has not been described, which we call *cladotrix placoides*. Let me refer to these, now I have named them specifically, as spheres, rods and threads. The fact of the matter is those physical features are very important, and let us ignore the names as of Latin interest, but not of any practical value to us. The spheres, the rods and thread formers are very conspicuous.

Now, it is interesting to find when we study the properties of these organisms: first, that they grow readily in saliva; secondly, that they grow readily in tartar mixtures, and thirdly, that they grow readily in the presence of saliva and tartar and dissolve enamel, a sequence that you see is very important. They also grow very rapidly in these mixtures, and in growing excrete an acid substance; they throw out of their bodies, or at least they make, in utilizing their materials, large amounts of acid, and the one is called acidophilus, because of its very striking yield of acid. When these have a sufficient amount of carbohydrate to work upon they produce remarkably large quantities of acid, developing degrees of acid that are high in concentration; the acid mixtures they produce from ordinary grape sugar, malt sugar and cane sugar, and from

starch, are acid substances of the kind that dissolve enamel very rapidly. So that it is plain that these are among even the very types that produce the acid from the carbohydrate which made repeatedly at a given point will dissolve the enamel, and in dissolving and pitting enamel they go right into their place and seem to be actually better nourished by going there. These are among the striking facts pertaining to oral bacteria in general.

Our second problem was not only to make this general survey to become familiar with the forms, but also to try to determine the types of organisms at those points on the teeth where decay has just about begun, to endeavor to determine the types of organisms that may be found near the surface under which the very first indication of positive decay can be found, where the dentin has not yet been involved. I am sure you, as dentists, would say that is undertaking a pretty large order in diagnosis to take from teeth any material over a point that shows the earliest possible signs of initial superficial decay without involvement of the dentin. In the dental clinic at Columbia we would examine individuals, dentists co-operating with us did this—and they would locate points of suspected superficial enamel decay. We would take the material immediately overlying those spots and proceed with our usual bacterial examination; then the dentist would proceed to examine and determine whether his diagnosis had been correct. Was the enamel involved? If it was, it was a simple matter for us to record that the sample taken was not what we wanted. First we took what we thought was desired, and spent all the time necessary in the diagnosis. Working in that careful manner we obtained the material in mucin plaques from 40 different human cases, and we have studied the types of organisms to be found in that type of material. Our working hypothesis was that bacteria in this kind of material are and must be the forms which initiate the decay. We are more concerned in knowing what starts the trouble than merely knowing in a general way a lot of things that keep the trouble going. If we can prevent the beginning of decay it is obvious we prevent all the rest that may be involved. It was interesting to find these three forms I have mentioned, and they were outstanding in the general survey, were practically the only ones found in the study of the material in all these subjects of initial decay, and they are the types found in the mouth which individually and collectively produce from a given amount of carbohydrate the largest possible proportion of acid.

I call your attention to this, because each type fits into the requirements of our search for the organism which will make acid from carbohydrate, which will grow on a mixture containing dissolved enamel, and which will produce an acid that will dissolve the enamel. We found these types occur in practically absolutely every case, for some of the types, perhaps not the three collectively, were always present. It is very obvious, while we cannot say we have completed every possible variation on this enquiry, while it is possible naturally that others may be found not present that might be responsible, it does seem obvious after four years of continuous study of this one problem alone. We have concentrated likewise steadily for years in the study of, and in 40 odd cases we found the same thing—these types of bacteria as apparently the initiators of the decay. We have had some evidence that in some cases that one form is more responsible than the others. We are not sure that one form does not form the key through which the combination may work; we are not sure that one may not be the actual initiator, in time helped by the other two; we cannot say at present that the three do collectively work from the beginning; and that is the next phase of the problem to find out whether either of these three helps the other two to do anything; whether either one of them would accomplish decay by itself. We know they make acid individually that is destructive, they answer all the requirements, and they look to us as simply a combination which, working together, bores its way through the enamel with its instrument, the dissolving acid.

Now, I presume you have read often, and heard often, and have used often the expression "mucin plaque." I know that many dentists believe that decay is initiated in and under dental plaques when it is not initiated by some traumatic or some very special circumstance. I am not sure that dentists agree universally that that is true, but so far as my information extends a very great many dentists believe a mucin film, a mucin smear precedes, on a given surface, attack of the teeth.

One of the most interesting features of the thread form is the fact that it adheres tenaciously to smooth surfaces and forms a network of entangling threads. The spherical form does not happen to do that: the rod form does not do it, but the thread former, with its adhesive, smeary, sticky thread, will adhere to glass surfaces very readily, and we have found it on our test tubes, in which it is cultivated. So that even the

most perfectly smooth surfaces will hold these threads and make an entanglement which I have assumed and suggested may be a mechanical sort of mucin plaque in many cases. These threads tending to stick, if they are not rubbed away, form more and more of a network of underbrush growth, so to speak, in which this, that and the other thrown back and forth in the saliva will be entangled and make a pretty tough, tenacious, smeary mass, so that the anatomical quality of this one form is conducive to the deposit of the mucin plaque and the production of the so-called mucin plaque or film. It is quite possible further research will show that the thread former puts down the foundation for the entanglement. An entanglement again of an offensive kind—in this case not by any means defensive—is an entanglement of threads with their forms being held there conveniently against ordinary mechanical movement; then that the interspaces filling up and carbohydrate and food in degree being washed in would serve as a very effective medium for retention at these places and initial focal decay. Once the decay is started such an entangling is more or less immaterial, for the decay would go on without any particular mechanical assistance of that kind.

Now, naturally the question arises, if all this is true, if we know these to be facts, what may be done to control the forms of deposits of bacteria in the mouth? What may be done to prevent the production of destructive acid? And we here confront what you know is at present one of the real practical problems in dentistry. Does anybody know enough to answer this question that I have just presented? Are we able to say how we shall keep bacteria from arriving at any point on the teeth? Are we able to say how bacteria shall be prevented from remaining where they go? Do we know anything that will enable us to prevent carbohydrate from going to those parts of the teeth where bacteria persist in going and remaining? Do we know of anything that will prevent bacteria from feeding on that carbohydrate and making acid? Do we know anything as to how to prevent action of that acid at this point when it is made by bacteria from carbohydrate thus delivered? And are not these fundamental questions? Your Research Committee, your Prophylactic Society, are unquestionably interested in the answers to all these questions. What is mucin, and what is our present scientific understanding of the quality and nature of this material? I believe this must be clearly understood by any investigator, and by any Research Committee, and by every dentist who wishes to proceed with

understanding also of the practical facts in the case. Mucin is one of the albuminous substances, also called protein, which happens to be peculiar or different from nearly all the others. It is albuminous matter, combined with carbohydrate or sugary matter, and the technical term for it, descriptively, is glyco-protein—mucin is also called a gluco-protein. It is very much the same as saying it has the principle of the artificial combination of egg white and sugar. While that would be a combination that would not look like mucin, it would be in principle like it. If we were to take the typical albumen in egg white and combine it with sugar we would get a combination that in principle would be like protein. Mucin is protein of this peculiar kind. It occurs in various parts of the body, as well as in the saliva. It does not occur in the blood; it occurs in bone and ligament and in tendon, and it occurs especially in all embryonic tissues. It occurs in all the ordinary secretions. It is protein of a very peculiar kind. Secondly, a quality that is striking is that it is an acid substance. It is a protein acid. It is about as weak an acid as boric acid; in fact, it should be said it is weaker. It is an acid substance that has the power of making a number of affinities per unit of its mass per molecule. Boric acid has three replaceable units in combination with basic matter. Mucin has more than three, but it is so feeble in its tendency to react with basic matter that we say by reason of this general disinclination it is a very weak acid. That is a striking chemical fact about it that must be kept sharply in mind. When you obtain mucin from saliva itself, or from any place else where it appears, and you proceed to smear that on enamel it does this interesting thing: it will dissolve the calcium out of the enamel. If I take saliva, or if you do, and add an acid to the saliva that is stronger than the mucin, say acetic, the acetic takes the base away from the mucin, because it has an affinity and it leaves the mucin without a base; then the mucin separates and curds. We can take that out and purify it and wash away the debris and get pure mucin. If we take pure mucin and put it on enamel or mix it with pulverized enamel, we dissolve the calcium out of it. The mucin changes the part so taken from its curdy, insoluble form to a soluble form. In other words, we have taken from the enamel a base to make a salt of the mucin, and that salt being neutralized, now goes into solution. It combines with saliva. Saliva ordinarily contains no mucin. Mucin combined with a base in the form of a salt which is hydrochloric

acid does not appear in the blood, but sodium chloride does appear in the blood, and potassium chlorate appears there.

I may be seeming to be using a lot of words without saying anything important. Let me warn you what I am saying is something that goes right to the heart of certain points on erosion, and is not something without meaning.

Mucin is protein acid which has the power of combining with bases to form salts that are soluble and disappear readily in water. Mucin itself is insoluble in water: is insoluble in saliva. When mucin gets into the normal saliva from the salivary glands it is in solution; it is there as a salt. It may be only one part of its capacity is saturated; it may be only two; it may be only three; it may be all are saturated. The larger amount of base combined with it the more perfectly it goes into solution. Mucin salts have a remarkable affinity for water. combine with water, so that if I were to take 2-10ths of a gramme of sodium of mucin which I had made from saliva and would put it into one hundred centimeters of water it would readily dissolve or go into solution, and I would get a mixture like thick mucous. The water has combined with the salt to make it a viscid mixture, the product dissolving in water at the same time. In other words, I could present to you sodium mucin 2-10ths of a gramme and one hundred centimetres of water, and put it in it, and present to you what you would agree is good, ordinary, very thick saliva; and for our demonstrations, when we lack saliva and must have it in a few minutes, we present it in that form with entire propriety, and even some of the assistants can't tell the difference. The viscosity is there, and we now know it is mucin salt that imparts the viscosity to the saliva. We know according to the stimulation applied to the salivary glands the mucous matter will come out thick, having much mucin in it; or come out thin, having little in it; that the thickness or thinness of the saliva is dependent on the proportion of sodium mucin in it. Each of the three types I spoke of lives in the presence of all of the types of mucin that appear in the saliva; it thrives on it. It splits the carbohydrate off from the mucin, and it can make acid from mucin carbohydrate. I will repeat that. The three types of organisms can and do grow in the presence of sodium mucinate. They tend to feed on it, and fracture it into its parts. Some of the parts they thus get is glucose, and they can make acid from that, as they can make it from any glucose given in the first place. Secondly, when a sodium mucinate smear is made on the teeth or anywhere, and the bacteria that

I refer to grow in it and make acid there or something else, the acid eats into this mucin film to a certain extent and precipitates the mucin, curdling right around the bacteria, helping to pack them down all the tighter on the surface. If there is a smeary, adhesive film all over the top it packs it down very solidly, and is very good food material, and is also very good productive material. These solid flakes have no action on the bacteria whatever, except simply so much piled up food when food is called for.

Another interesting thing about the mucin film is that despite its smeariness, despite its adhesiveness, sugar in solution will diffuse right through it. In other words, if I take a suitable medium, let us say a piece of animal membrane through which a solution of sugar will pass readily by diffusion: if I take a pig's bladder and put water and sugar in it, and then immerse the bladder in water for a little while, I can soon show the sugar has passed through it. If I put a mucin smear all over the bladder and let it dry to any degree of dessication, whatever the degree may be, and I put it back in the water, I can get just as rapid diffusion through that mucin film as if it had not been done. Or if we put a mucin film around the bag and then immerse the bag in mucin smear itself, the sugar will go through the bag, through the mucin to the very limit of the mucin mixture.

Now we know that diffusion, in other words, of carbohydrate, the acid yielding substance, will occur in all directions through mucin smears. Observe what happens to our conceptions of causes and effects. If a mucin smear forms anywhere on the teeth; if it forms upon a place where there are no mechanical movements to remove it, and sugar of any kind is taken into the mouth and dissolved in the saliva and distributed, the minute sugar comes in contact with the surface the sugar will tend to go right inside. If bacteria are there, covered by this abundance of food, and it has an opportunity to stay there, they will feed on the sugar that goes in solution through the film to the teeth. We do not need to think of sugar particles or starch particles, or food mass with the carbohydrate in it visible to the eye. A carbohydrate that is in solution, that diffuses into the mucin, is just as responsible for decay at that point as any other.

Now, what are the things that will distribute the mucin smear effectively? In the first place, the mucin film to some degree tends to form all over the teeth. We know that. In fact that seems to be desirable. I might state another

physiological fact, well known about mucin: if you take two equal quantities of water and expose them in flat evaporation dishes—for instance, two saucers—and put a small amount of mucin in one and stir it in, and none in the other, the water in the mixture that has no mucin will evaporate readily. It may take one day to evaporate; it may take three to four days for the water to get out of the mixture with the mucin in it. In other words, mucin retards the evaporation of water from the oral membranes and from the teeth, and it unquestionably functions everywhere in the mouth as an efficient agent in keeping a small amount of fluid evenly distributed, helps to keep that fluid in the position where it will keep all parts moist. Of course, you know teeth must be kept moist in order to retain their normal state, and when you stop to think of the amount of hot air moving back and forth ordinarily it is an important function which it does perform. Mouth-breathing in some individuals is unquestionably bad for the teeth by reason first of all of the alternate expansion and contraction of the enamel that ensues.

Doubtless you have all realized when a tooth lies exposed to the air, removed from the mouth, and tends to take on its more and more decayed character, what is happening is simply loss of water. You can restore the original weight of the tooth by putting it into water and giving the water a chance to go back. Researches have recently shown very conclusively that substances may pass back and forth from the saliva into the teeth in all directions, and that water and common salt and sugar are amongst the substances that will go right through slowly, but surely, just the same. So the mucin film will hold the carbohydrate, will permit it to enter, and will be a kind of trap for this stuff that yields that acid that causes corrosion, that opens the enamel, that drills the dentin, that builds the house that Jack built, and so on.

How shall we manage to get rid of these films which overlay the teeth universally? When I bite into a sour apple I feel that my teeth have been put on edge. I am sure they have not been sharpened, but something has been taken away from them that previously lubricated them. When we get that effect, what actually happens is we remove the physiological film from the teeth, and for the moment the teeth lack the gliding, easy, non-frictional surface movement. It is evident that that kind of material would remove the mucin plaques. We know chemically that such material does. We also know that alkaline mixtures dissolve mucin. Among the alkaline

substances that are commonly employed to accomplish this result, either knowingly or without comprehension of the matter, have been such substances as sodium carbonate, lime water, soap, and even the miserable alkalis, precipitated chalk and phosphate. We know that alkali by coming in contact with mucin saturates the compound, the basic matter, and makes it more and more solvent. It tends also to make it more viscid; it tends to make it softer. The bristles are not effective in brushing such a surface; the bristles may go through the smear as they might through molasses. They would furrow it, but the material would move up and close up by its viscosity, so that if the alkali is of the kind that makes the mucin soft, and mechanical effort is not effective, the mucin is not entirely removed. One of the improvements in the treatment of linen that has been soiled by mucous collections of all kinds, such as from the nose on an ordinary handkerchief, is to treat the linen first of all with some kind of acid which curdles the mucous matter—it pulls the base off and breaks its grip. Curdled mucin has no particular grip. Even cloth can be flushed up and down in water, and it all comes away, but when you try to wash such a collection with alkali you find you have got to use acid friction to wash it out after you have got it soft. You make it more adhesive, and you increase to some extent the mechanical difficulty of its removal; and in order to accomplish the mechanical removal the use of abrasives has long been employed. It is well known why one uses an abrasive; if possible an abrasive that will do no harm to the teeth. Such material as precipitated chalk and phosphate gives the bristles in the brush a certain amount of breadth and punch and push that by themselves they would not possess. An abrasive mixed with an alkaline mixture can be regarded as something highly efficient in the removal of the mucin plaque.

I am sure it is nothing new to suggest that there are at least three phases of the problem of keeping bacteria moving on the teeth. If we keep them moving and keep them from colonizing we may say we prevent any hurtful result. Those three phases seem to me to be: first, the use of a dentrifice or its equivalent that will not injure any part of the mouth or person; secondly, the application of the dentrifice by an instrument that will put the dentrifice where it ought to go; and third, the development of a disposition and purpose on the part of the individual person to use that dentrifice and put it where it ought to go with that instrument. And if you cannot get a combination of those three things in your subject the

whole system breaks down. What is the use of the dentrifice if the person won't use it? What is the use of the dentrifice if it is not even put where the dentrifice will remove something? What use may it be, for instance, on the upper incisors, which may be kept in certain individuals entirely clean day in and day out by means of the lips alone? It may be useful there in some view, but theoretically is that the only part of the mouth to receive any special attention? And yet how many of our people believe what they can see is the main part and only part to deserve any special attention. What are we doing as scientific men, as dentists, as citizens, to improve the situation in that respect? I am very glad to find your Research Committee and your Prophylactic Society have taken up this very series of questions. Of course, they will consider these problems, since they are the three first ones that logically must come to every mind that reflects on the subject. What is the best dentrifice? May be there are lots of them; may be half a dozen are *the* best in the sense that if properly applied each will do what it ought to do. What brush, what method, what instrument, will carry the dentrifice or dentrifices to the places foreign matter and bacteria should be taken away from? What are we going to do to have each individual person realize from childhood that proper, earnest, effective care of the teeth is an important feature in the maintenance of the health of the individual? Associations such as you have, unquestionably, by taking the attitude they are today, ought to serve the people at large in the provinces; and I say associations such as this suggest the key and provide the answer to the broad question. This will never be accomplished by the individual dentist, that is plain. It will not be accomplished by the individual dentist unless he works with a feeling that he has a composite of experience and belief and conviction and fact to warrant his recommendation. We all know that the manufacturer of products, the manufacturer of goods of any kind will sell those goods; let us say legitimately, without any comprehension professionally of their shortcomings in many cases. It is not necessary to say that the business man who wants to sell a dentrifice is necessarily wrong, or even crooked. We know many of them are; but it is also true much of it is in plain ignorance.

This leads me to comment, in passing, on another matter, and I am sure now you will see the resemblance between Artemus Ward's speech and my own. I am led to refer to acid for the benefit of those who may later, or even at the present,

have occasion to think this matter over. It is interesting to find how the word "acid" tends to impress the average person as meaning the limit of destructive matter. The acid test, for example the boric acid test, wouldn't be much to apply to a recruit—sulphuric acid would. He could take some of that in his hand and hold it for a while and he wouldn't be fit to go across. If he could take boric acid he certainly could get away with the test. There is so much difference between acids that they range all the way from the kind that has practically no acid action at all to the kind that has practically no other kind of action. Take boric acid. You can make a saturated solution of it, and you can drop all of it you want on the eyeball, and you can do that with therapeutic purpose and therapeutic effect; yet you have taken the strongest possible solution of boric acid and benefited one of the most sensitive surfaces in the body—the eye. You would put boric acid into the mouth freely, but you would not put sulphuric acid. What is the chemical explanation of this great variation in acid? You would not hesitate ordinarily to take a spoonful of grape fruit juice, that has acid in it in great abundance, very strong acid. You may put sugar on it even to disguise the taste of the acid without neutralizing the acid or reducing the quality of it. You may like lemon juice, that is much more acid than grape fruit. You may like something pickled with vinegar, which has as much as seven per cent. of acetic acid in it. Acids are alike universal in one important respect—they are compounds of hydrogen. It does not fully define it, because something else must be said beside; but all acids are compounds from hydrogen. Hydrogen to which I refer is always, in part at least, of one kind. Let me say it this way: Some of the hydrogen in every acid is replaceable by some other like base of the sodium potassium type, but some of the acids when dissolved in water yield up the hydrogen in this respect so slightly, so poorly and so little in degree, that there is very little reaction with them by other things. They tend, in other words, to react slowly and almost not at all. At the other extreme, such as sulphuric acid, the hydrogen is so free to jump to something else and get out so that a base can come in that we speak of it as a strong acid. The fact of the matter is, the stronger an acid happens to be the more its hydrogen is willing to jump through water to another position and give way to a base. In other words, it is disassociated away from the rest in the water more readily; the water, when it goes into solution, separates

it from the rest. A strong acid is an acid which yields up the largest proportion of hydrogen when it goes into water solution. We say acid is disassociated and the hydrogen ionizes. Faraday manufactured the word one hundred years ago. The acid disassociates the water and hydrogen ions, when abundantly produced and makes a substance which is a strong acid. When, on the other hand, hydrogen tends to stay with the whole mass when put in water and does not tend to go out, we call it a weak acid. In boric nearly all of the hydrogen stays with the rest; it does not disassociate; it does not go away; it does not ionize; it does not tend to run off on its own hook; whereas sulphuric put into water tends in the other direction, and hydrochloric, nitric, phosphoric and quite a number of other acids do the same. Acetic and acids of the fruit acid type, such as are present in fruits, are much less inclined to do it than sulphuric, and yet they are also inclined to this to some degree. So that we may say we have a strong solution of a weak acid, and mean by that a high degree of concentration of a weak acid. We may also have a low concentration of a strong acid. It is about the same as saying we may have a large number of weak men, or we may have a small number of strong men. We think there is no contradiction in the terms at all. So we may have a large proportion of weak acid and we may have a small proportion of strong acid, and then we are very apt to say we have a weak solution of acid or a strong solution of acid, and get all twisted up in our terminology. The acid that we take into the mouth in salads and foods in general has the interesting effect on mucin of tending to break up the salt by pulling the base out of it, curdling it, loosening it; and then we say our teeth are on edge. Pickerol, of New Zealand, who has published a very valuable book on this and relating subjects, has called attention to what others also independently have concluded, for much the same reason, that it is a wise thing to terminate a meal with a normal natural acid food. For this reason a number have agreed on this wholly independent of each other. It is a very interesting point that a number of men, widely separated upon the earth, without wireless communication, have arrived at the same conclusion; and the point that is made is this: that food acid, like grape fruit juice, apple, orange, lemon, salads and so on, ordinarily have a relatively high degree of weak acid, enough to curdle all the mucin and break up all the plaques present on the teeth at the time. If we terminate the meal that way we are not apt to leave any solid starchy, pappy, pasty mass in the

mouth; or if we take the precaution further to select these natural things that happen not to have them, or if they do have them, they appear in large pieces in the mouth that are more or less easily moved along. In other words, instead of terminating a meal with a soft, pappy, messy, adhesive, slimy stuff called dessert, we might end up with something as common, even in war times, as an apple. Take an apple, for instance, and put a little cream on it and you have all the pleasant associations of a dessert without any disability. The fibre, all of it together, works effectively to help to clean the mouth. In fact the more you must chew the dessert, and the more nearly it agrees with the acid normal food conditions, the more thoroughly you cleanse the teeth without thinking about it. If we were to terminate each meal in such a way, instead of perhaps starting a breakfast that way and ending with something sugary—if we were to terminate the meal that way we would accomplish a great deal without even seeming to be doing it, and aiming to do it. Then we have another very interesting virtue in this relation. Of all the things which, put in the mouth, effect the most striking taste stimulus, the most striking chemical stimulus to the salivary flow, the food acids happen to be those things. Food acids will make the saliva flow with extreme abundance. There is normal physiological afterflow, so that if you terminate the meal with this kind of fibrous acid material you cleanse the teeth mechanically, and facilitate the afterflow of the saliva, which presumably has the virtue of alkali, more or less desirable to replace the film which is physiologically desired. These are factors, then, that cannot be presented as solving all of the problem, but they are easily-adopted procedures to help. They are recommendations that have also the element of sanity and the element of ordinary common-sense, and they fit in to what might be said to be good dietary habits. If you can, get each of your patients to eat three apples a day. I assume they are of ordinary size to suit the body of the individual. Have you ever heard of anybody suffering any material injury from a habit of that kind? What about a family that gets this good, solid, substantial kind of material? I understand apples are very abundant in New York State; but I am not here representing the apple growers' association. Perhaps you have them more abundantly in Toronto. Lemons from Florida will do just as well, or oranges from California; other fruits, whatever they happen to be, outstanding likewise. It points to this fact, that all fruits, with very few exceptions, are acid enough

to break the mucin film. I remember looking into this a few years ago and finding to my astonishment that while water-melon and canteloupe and certain forms of very sweet cherries did not, that all the other fruits, in a selection of about thirty, did have the power of precipitating mucin from the solution. Squeezing the juice out and mixing with mucin solutions gave a prompt precipitate, and I remember of all the various types of apples we took, one part of the juice in sixteen of water would precipitate mucin from the mucin solution. It requires relatively little to do it. Therefore, when you bite through an apple, or through an orange, or through any food acid mixture, you accomplish, if nothing more, at least the prevention of an after deposit or composite of carbohydrate matter that is very desirable, and stimulate an afterflow of saliva; and if now in between we use suitable dentrifices and brush properly, then with ordinary superficial cleanliness we will prevent the disease we are talking about, and we will assume we would accomplish it.

This leads me to raise another question. Under the auspices of the National and New York Societies we have been studying for several years two questions, one of which we believe we have settled. One is the relation of supho-cyanide to dental decay. I imagine that as the centre of interest in that particular problem is in Buffalo you in Toronto in the past have heard a great deal about it. I don't believe you hear much about it any longer. The reason is when the problem was studied, without any enthusiasm for or against anything, without any of that bias that is developed through the empirical belief, standing by one's guns, that it is not a good thing. On the other side, standing by one's guns on a wrong opinion is heroic, but the guns are sooner or later captured. Sulpho-cyanide is one of the very obvious ordinary waste products made in the liver and eliminated by various channels, including the mouth, and it never had any relation — and never could have that anybody could make out — to any purely physiological disease like uricemia in the urine. That also appears in the saliva, but if I may reasonably suggest, it has no relation to the disorder.

(To be concluded.)

THE SO-CALLED TRENCH MOUTH

B. S. BAILEY, D.D.S., L.D.S., Captain, C.A.D.C.

Read before the Winnipeg Dental Society, March, 1918.

It almost seems a shame to spoil this 'pleasant evening by having to revert to our work in any manner whatever, and especially after such an appetizing meal to commence a discussion on such an offensive mouth condition as that produced by ulcerative stomatitis. However, if we must talk shop, as it were, possibly we cannot do better than to spend a short time in a consideration of this subject, as with the return of our boys from overseas the dental surgeons in civil practice, as well as the officers in the military clinics, will come into contact more and more with this peculiar pathological condition, and before very long we all will be called upon to exercise our patience and skill in the treatment of many distressing cases.

It is stated that this mouth affection has made its appearance among troops during every great war for centuries, disappearing again soon after demobilization. This would naturally indicate that there is some unusual condition produced by the system of assembling great bodies of men, of billeting, rationing and training them, their newly acquired habits, the not surprising cessation of oral prophylactic measures, the frequent periods of physical exhaustion after a day of intensive training, or a shift in the trenches. Some one or some combination of these unusual conditions renders the soldier very susceptible to the action of the bacteria involved, and so in the armies of to-day we have an ulcerative stomatitis in epidemic form.

The organisms most frequently mentioned as being causative are those of Vincent's Angina, a spirochaete of from five to nine convolutions, feebly motile, anaerobic, and staining but faintly with methyl blue. The fusiform bacillus is also anaerobic, slightly motile, and stains unevenly, showing sections divided by a band more resistant to the stain. There seems to still be some question among pathologists as to whether or not these two are the one bacillus in different forms of development.

Great difficulty has been experienced in reproducing the disease by inoculating the subject with the germs, all the earlier attempts being attended with failure.

The more noticeable features presented in the oral cavity of one affected are:

1. The odor of the breath, more offensive than that produced by any other condition, and distressing to the patient as well as the operator.

2. A filmy white pseudo membrane, in mild cases resembling white patches about the affected area, while in the more severe, the entire mucous membrane lining of the mouth appears as a blanched field.

3. Ulcerating condition of the gums along the gingival border, in the interproximal spaces, or possibly in the region just behind the lower third molar. The frequency of the last mentioned position as the locality where the disease first makes appearance, together with the usual previous history of throat or tonsillar lesions, would seem to form a connecting link between this form of ulcerative stomatitis and Vincent's Angina. Occasionally small ulcers are met with on the tongue, the lining of the cheeks, and even out on the lips.

4. The mucous secretions and saliva are usually profuse, and very irritating on the abraded surfaces.

5. The teeth in advanced cases become very sensitive on occlusion, and invariably are covered with salivary and muco-calculus, which deposits in abundance, even after treatment has been instituted.

6. The salivary glands, especially the sub-maxillary, become swollen and painful; possibly only on one side, and during treatment it will correct itself and the other become affected, without any change in the other oral lesions.

The general symptoms are very pronounced, but are only noticeable in very advanced cases. Inability to masticate solid food renders the patient very weak. Loss of sleep makes him mentally dull and depressed. This is only natural, but it exists in such an exaggerated form that it is surprising, especially in view of the fact that the temperature remains very close to normal. Out of approximately one hundred cases only six carried more than two degrees above normal, though a great number exhibited decidedly distressing symptoms.

The treatment is essentially two-fold. Skilful instrumentation and a great deal of medication by the operator, and a rigid, long continued, systematic course of rational mouth cleansing by the patient, both during and after treatment.

After trying many methods and all the prescribed drugs and antiseptic washes, I have adopted the following routine as best for the average case:

1. Spray the mouth and throat with a normal salt or Dobell's solution, being careful to have it about 100 degrees,

and not more than 5 to 7 pounds pressure. This will clear the field of secretions and food particles, and the patient can now tell you his story with a certain degree of comfort. The history is important, and never hesitate to inquire if any venereal disease has or does exist. In my experience all those who have received treatment for syphilis are predisposed to this affliction. Having obtained the history, spray the mouth again, and examine it. I use the fibre tongue blades in preference to the mouth mirror. They are just as serviceable, and it saves ruining mirrors by sterilization.

2. Wipe off with cotton any false membrane present, and remove the surface from all ulcerating areas. This leaves a bleeding, abraded, hypersensitive sore, and it is here that a swab will show almost a pure culture of the two organisms mentioned.

3. To this surface apply liquor arsenicalis, in spray form preferably, as it does not hurt the patient so much, though if there are any deep pockets it is well to flood them with it. The patient should be instructed not to swallow any, though there is no occasion for using the maximum dose at one sitting.

That's all for the mouth the first time; but now examine the nasal passages. If a catarrhal condition exists there, one can treat the month for weeks and not effect a cure.

Seiler's or normal salt solution should be used with the nasal spray, and a clear passage established and maintained throughout the treatment. It is well to have the patient come twice a day for the first two days, and invariably at the expiration of that time he will be feeling nearly normal physically and mentally, and the necessary instrumentation may then be executed without causing him any needless pain, and also with little danger of the new tissue exposed becoming involved. At this juncture examine all fixed bridges, crowns, etc., and gingival fillings. These simply must be made as near to perfect as possible at the gum line or there will be a recurrence of the trouble in the near future. Never hesitate to remove an ill-fitting fixed bridge or crown. You may as well do it first as last, and thereby shorten the treatment.

From this on the treatment will largely depend on the severity of the attack.

Usually it will be once a day for two or three days. Then the patient is dismissed for a similar period. If the condition warrants it, treatment is resumed for two or three days, and the patient again dismissed. I have no reason for recommending this intermittent method other than that I get in-

finitely better results than by treating every day without cessation. Many cases treated every day will soon exhibit a worse condition instead of better; or, at any rate, cease to improve. This is overcome by stopping treatment for a day or two. The average length of time required is about ten days. If the tonsils require surgical treatment, this must be done before a cure can be effected.

With regard to other remedies, the combining with arsenicalis of ipecac and glycerin, according to the formula of Major Bowman, C.A.M.C., is especially applicable where there is also pyorrhea alveolaris. The Carrol-Dakin solution gives splendid results where there is much tissue involved, or where there is a profuse flow of pus. Trichloroacetic acid, carbolic, silver nitrate, iodine, and some of the more widely advertised mouth washes have never helped me any.

The most disappointing, and at times unaccountable, feature of the whole subject is the question of recurrence. At first I had many come back in a few weeks as bad as ever; but I find that the more attention given the nose and throat and ill-fitting dental replacements, the fewer the number returning. Those who have suffered from the effects of mercurial treatment seem almost incurable while the teeth are in the mouth; though, of course, they are exposed to a much greater extent to reinfection; and you gentlemen will have a great advantage over we officers of the C.A.D.C. in this regard. Your patients will report to you for treatment in the early stages of the disease; and, also, they will not be so liable to reinfection. I wish you all the success we have had, and a great deal more.

A PLEA FOR PORCELAIN

F. J. Capon, D.D.S., L.D.S., M.D.S., Toronto.

Read before Toronto Odontological Club, March, 1918.

The subject of the little paper I wish to present to you to-night may not be appropriate, yet I feel that only a comparatively small ratio of operators are making full use of porcelain—this artistic process, possibly if I make the plea to re-establish the porcelain furnace to its full use again I would be nearer the point. Years ago porcelain work in its many uses ingratiated itself into dentistry, and had hordes of followers, in fact, was accepted by the profession as a most artistic process for restoring broken or lost crowns of teeth to their natural appearance; I can also add, restoring the surrounding tissue to a healthy and natural condition.

As I have already said before this club, our profession is most vacillating, accepting porcelain as a most useful art, and placing it on a pedestal so to speak, but again it has, to a very great extent, cast porcelain aside, just as so many other processes have met the same fate, which at one time took a high place in the evolution of our profession.

It seems to me the profession advances (for it must advance) in streaks, and a comparative few lead us from one of their new hobbies to another.

Many may pronounce the porcelain era from Dawn—can I rightly say to Sunset?—a short and merry life. You will no doubt agree it had a very merry and intoxicated time of it in the hey-day of its career, for there was a time that the dental journal was porcelain from cover to cover, and in the convention clinic it reigned supreme. Probably no one process created a better impression in its day or ever exerted so beneficial an influence over all the branches of dentistry as the work with porcelain.

While the profession as a whole literally jumped into the work, simply as a means of meeting the demand, not realizing it to be an art requiring that temperament should go with it, the hordes lacking this artistic taste necessary for its success, denounced it a failure, and grasped at any substitute. Fortunately for those who had only mechanical attainments, the silicate cement filled their requirements, and will continue to fill requirements, for it has its place in the practice of a porcelain inlay worker. It certainly comes to our aid in small difficult cavities between the incisors, more especially in the young

patient where separation and cutting so as to use porcelain inlay is obviously contra-indicated. The manufacturers knowing the side their bread is buttered, and having always catered for the demand, proceeded to provide ways and means to make the path easy that all should buy their wares. To digress a moment from the subject and go back over the history of the days when we were struggling for the truth in porcelain, we were compelled to use the block bodies, the fusing point of which ran about 3,500 deg. This process would hardly have been more than a passing event with the improved facilities of to-day, but when that degree of heat had to be obtained by the sweat of one's brow with hours of time to produce a miserable little inlay, it was indeed a hardship. We appealed time and again to the manufacturers of teeth to give us something lower, but nothing doing. It might be interesting history if I had time to relate the evolution that took place in my little laboratory in the nineties. At that time our one hope was in Dr. C. H. Land of Detroit, who produced the oil furnace, a big improvement on the coke. It was a simple invention as it would appear to-day; a saucer-shaped disc received its oil drop by drop from a reservoir and was ignited by the aid of a small amount of asbestos which acted as a wick, the flame was focused by raising and lowering the saucer with a lever, a stove pipe connection to the chimney did the rest. When I think over now the risks I took in burning down the building, it makes me shudder. The double muffle gas furnace was indeed a step in advance, the exercise one got from working the foot bellows was no doubt a blessing in disguise, but I can hardly recommend it as an exercise instead of golf. The platinum muffle came right on its heels, which again shortened the operation. Then Dawnie saw the short-sightedness of the manufacturer and produced a "glass" body. Then Jenkins' low fusing began to attract attention of the profession in general. Then Custor of Dayton invented an electric furnace, and then the manufacturer began to take notice. Bodies were lowered in fusing, and hordes of electric furnaces were on the market, and everybody was dabbling in porcelain more or less with some successes and more failures. To-day we have the manufacturer doing everything possible to make this artistic process easy for even a man who possesses the mechanical without the artistic temperament. The pyrometer is attached to his electric furnace to register the proper heat for fusing, and the porcelain bodies are given him in numerous grades of fusing points with wonderfully accurate tables for producing

exact shades as for accompanying guides. Thus we find the knots and tangles of former days entirely smoothed out, and everything made easy. Yet in the face of this wonderful evolution of porcelain, we find a sliding back from the work, with a comparative few to-day practicing the art. In the minds of the great majority, the ready-made porcelain crown and silicate cement fills the bill and produces the coin.

In making my plea for porcelain art, let me say that without it the finer side of your daily pursuit is being lost, those little artistic touches that finish—yes, please the operator as well as the fantastic and critical patient.



Porcelain furnace and equipment of twenty-five years ago.

The necessity for taking infinite pains which porcelain requires of an operator, in order that he may succeed in its various uses, soon becomes a habit, which I may say he carries into his other work, where he may have been less careful before, this necessary art required in working predominates his personality, and his ambitions are stimulated to a higher plane.

Possibly these ambitions carried some of the earlier enthusiasts into fields that led to failures, when applied to inlays, crowns and bridges in the masticating regions, but naturally from failures one learns to use discrimination.

The porcelain jacket, which after a test of years is doing a great deal to bring the furnaces from their remote resting

places, renewing the "dust of ages" and testing the terminals with juice. Many of my hearers know that I have been an ardent advocate of the Land jacket, which were of the platinum shell and porcelain face character, and also the all-porcelain jacket, which is better known as the Spaulding porcelain jacket. This latter style of jacket is responsible for renewing the enthusiasm of those wishing to produce and give art to their own satisfaction and to the wearer. We may have to thank the trend of the times for the renewed interest in this porcelain jacket, which comes as a necessity for covering a live tooth with porcelain. This practice was discouraged and called criminal, but the much talked of foci of infection has changed the complexion, as much courage is required to kill a pulp and vouch for its continued health. This, too, may have a lot to do with restoring the confidence in the strength of porcelain jackets which has required many strong arguments and proof to convince the sceptical. Yet I have these jackets doing their duty for nearly thirty years. I feel it is only fair and proper not to conjecture on so beautiful a gift to the profession, "the re-enamelling of the tooth." I was pleased to be able to unearth the following extract from an article written by my friend, Dr. Edward B. Spaulding, Detroit, Michigan, entitled, "Replacing the Entire Natural Enamel with Porcelain," in which he says:

"In February, 1903, Dr. C. H. Land showed me what seemed to be at first glance an extracted central incisor, with the enamel detached from the dentine in one complete shell, but which upon second inspection, proved to be a shell of porcelain reproducing the natural enamel. It truly was the prettiest thing I had ever seen in dental porcelain, and Dr. Land refers to the process in his article in the 'Dental Cosmos,' Vol. XLV., 6 and 8, June and August, 1903. At first I had no faith in the durability of such a thin shell of porcelain for actual use in the mouth, but the beauty of the thing led me to experiment on extracted teeth, and after cementing several on the models and finding what severe tests they would withstand, I decided to put them to practical use in the mouth, and since May, 1903, have used no other method for crowning incisors and cuspids where there remained sufficient dentine. I have also used the method on many molars and bicuspidis."

Those of you present who attended the clinics at the recent National in New York, no doubt noticed with what prominence this porcelain jacket was displayed by the clinicians not only by the Detroit clinic clubs, but prominent workers of porcelain

from California, where this class of operation is practiced almost exclusively in high-class practices. It is no longer essential that a wholesome amount of dentine is required, for if the root has lost its entire crown, a cone of gold or amalgam is made to replace the dentine and then jacketed. Porcelain molars and bicuspidis are quickly superseding the gold in a practice where high standards are called for.

I fully intended giving some notice to the staining process as a further plea for porcelain art, as we all know that there are times without number when it seems impossible to produce the desired effect, when the staining process comes to our aid, when the touch of the brush gives the final pleasing result.

To practically demonstrate to you the value of porcelain as a means of restoration of a couple of cases I have had in my care the past week. One particularly appeals to me as rather sad. A pretty, young bride, coming from her apartments, stepped on a loose board on the stairs and fell forward, mutilating her face badly and breaking off the upper right central and left labial, leaving a slight amount of tooth on the labial, the fracture running a good one-eighth inch below alveolar process on lingual aspect. The fractured portions were being held by the pulp. After anaesthetizing the parts, the pulps were removed, and the canals filled, which, I may add, was no easy operation owing to blood and serum. The canals were filled at once, feeling that they were free from infection, which most likely would not be the case owing to the difficulty of sealing. A dowel was cemented in the pulp chamber of the broken portion, and with sufficient temporary stopping to form a pressure, it was forced back into position and left for ten days. With the slight amount of tooth left labially, it gave me a chance to retain a porcelain jacket, the choice of crowns for this particular case, as there was a large amount of soft tissue involved. My first move was to fit a copper band to the remaining portion of root, by fitting the band approximately, then cutting out a V out of band and resoldering, a fine fit was obtained. This band had a three-fold duty, it kept back the tissue and blood, it then formed a guide for the fissure bur to travel against, and thus making a true shoulder for porcelain the entire circumference. The band was finally used for obtaining impression with compound, into which a Spence metal cast was formed. Upon the cast a thin platinum shell was made, then a thin layer of porcelain was biscuited on the platinum, so it could be handled and burnished on the tooth, the crown was then formed, and when finished, the

jackets were so true to their neighbor that I defy their detection by the most critical. This is only one of the many interesting cases for porcelain that very frequently present themselves.

CANADA LEADS THE WAY

THE WORK OF THE ARMY DENTAL CORPS.

An army fights upon its stomach, it has been said, but it would be more accurate to say that an army fights upon its teeth; and this is especially true of trench warfare, where exposure finds out a man's weakness, and makes a good digestion difficult to preserve. The president of the British Dental Association stated recently that the Canadian army was the only army in the world that attempted to send its soldiers to the front dentally fit. To Canada belongs the honor of being the first country in the world to organize and put a separate Dental Corps in the field; and New Zealand's army is the only other one that has another such corps, though it is understood that the Americans are organizing a Dental Corps. In all other armies the Dental Corps is part of the Medical Corps.

The advantages of having a separate and distinct establishment are obvious. Directly a draft arrives in England from Canada it goes into a segregation camp, where it is examined by the medical and dental officers. Nominal rolls are made out of the work to be done, and a re-examination takes place of each man when he has been drafted for the front. It may be definitely asserted that no Canadian soldier goes to the front who is not dentally fit.

The Headquarters Staff of the Canadian Army Dental Corps consists of Col. J. A. Armstrong, C.M.G., Director of Dental Services; Lieut.-Col. O. K. Gibson, Deputy Director of Dental Services; Lieut.-Col. A. A. Smith, Assistant Director, and Major A. W. Winnett, Deputy Assistant Director. Lieut.-Col. W. J. Bentley, M.B.E., is in charge of the dental services in the Shorncliffe area; Lieut.-Col. J. E. Holmes in the Bramshott area, and Lieut.-Col. C. Brown in the Witley area. The total number of dental officers is 190, fifty of whom are in France working under the C.A.M.C. with the men in the front line. In addition to the officers there are 500 orderlies and mechanics. All cases of wounds in the jaw and mouth are dealt with by dental officers who are specialists in such cases. Valuable research work is being carried on in the in-

vestigation of trench mouth, a disease very common among soldiers who have been long exposed to the hardships of the trenches.

The Dental Corps began its work in July, 1915, and since that date it has, up to the end of December, 1917, dealt with no fewer than 1,375,629 cases. The figures for the month of December were: Fillings, 22,752; treatments, 12,779; dentures, 3,831; prophylaxis, 5,230; extractions, 9,045; devitalizing, 2,166; total, 55,803. These figures show not only what an amount of work the corps gets through, but also demonstrates how very important and necessary that work is.

When the Overseas Ministry of Militia was established the Dental Corps was made a separate establishment, and in March last year it was put on a recognized military footing.—“Canadian Gazette” (London).

360 Selkirk Avenue,

Winnipeg, April 15th, 1918.

Dear Doctor,—At the regular meeting of the Winnipeg Dental Society, the following resolution was unanimously adopted:—

“Resolved that members of this Society strongly advocate securing in favor of those dentists who have served at least six months, and have been honorably discharged from the Canadian Army Dental Corps, or other branch of the British Army in which they may have served, the privilege of locating anywhere in Canada. This privilege being granted through the Dominion Dental Council upon payment of the usual registration fees, and the fulfilment of the Council’s ethical requirements, or failing this, to secure for these men reciprocity with such provinces of Canada as would be willing to enter into such an agreement.

“That the Secretary send a copy of this resolution to the various Provincial Dental Boards, the Dominion Dental Council, and also to the Dental Press of the country.”

Sincerely,

LYON BERCOVITCH,

Secretary Winnipeg Dental Society.

Dental Societies

CANADIAN ORAL PROPHYLACTIC ASSOCIATION EDUCATIONAL COMMITTEE ANNUAL REPORT

Mr. President and Members of the Canadian Oral Prophylactic Association:

Your Committee on Education begs leave to report as follows:

At the last annual meeting of this Association, held at the Walker House, Toronto, on January 15th, 1917, the initial movement toward the encouragement of scientific dental research by your Educational Committee was completed when the medals and prizes for the Canadian Dental Research Competition were presented to the winners. Capt. F. W. Barbour, of Fredericton, N.B., made the presentation of the prizes in the name of the president of the Canadian Dental Association, Dr. Nolin, of Montreal. Dr. A. E. Webster, Dean of the Royal College of Dental Surgeons of Ontario, presented the medals donated by this Association and gave a brief outline of the work of the prize winners, as well as that of Dr. Trigger, of St. Thomas. He said that the judges in the research competition had intimated that the essays were the best prize essays that had been so far written on this continent. Dr. Webster spoke also of a committee which had been appointed by the Canadian Dental Association to draft a broad constitution for that body. Dr. A. J. McDonagh, president of the C.O.P.A., explained the emblem of the Association appearing on the medals, which were cast from a die in gold and were about the size of a twenty-dollar gold piece. The winners were Dr. Harold Box, Toronto; Dr. M. H. Garvin, Winnipeg; and Dr. W. E. Cummer, Toronto. Drs. Box and Cummer were present and spoke in an appreciative manner of the efforts of this Association in encouraging scientific research. The essay of Dr. Garvin has since been published in pamphlet form and will be mailed to the members of the profession in Canada, as well as to many others across the line, particularly those engaged in dental educational work. Many difficulties were encountered by the committee in their efforts to prepare for publication the work of Dr. Box, which necessitated the making of a large number of cuts from microscopic slides, and this has been left

in abeyance for the time. Dr. Cummer's contribution has already appeared in some of the dental journals.

Dr. Frank Price commended the prize winners and hoped that they would continue their studies. He felt that it was a stimulation to all of us to do research work, and that it was an honor to make discoveries and give the public the benefit thereof.

Capt. H. S. Thomson, of the Army Dental Corps, Military District No. 2, gave an outline of the dental work being done for the soldiers, noting particularly its high-class and permanency, using the X-rays for root canal work, etc.

Dr. R. J. Reade, chairman of the Oral Hygiene Committee of the Ontario Dental Society, was present. He said he would like to see the provincial societies a part of the greater organization—The Canadian Dental Association. Dr. Reade suggested that the local societies might be a part of the provincial societies, and he felt that this arrangement would be especially applicable in the educational work.

During the past year your committee has prepared a set of display cards of an educational nature for use in teaching oral hygiene in the public schools. Through the courtesy of the Board of Education, Toronto, Department of Medical Inspection, it was possible to secure most of the cuts used some time ago by the Oral Hygiene Committee of the Ontario Dental Society in the production of similar cards which had been originated by the late Dr. W. H. Doherty. Unfortunately some of the cuts had been lost in Montreal, which necessitated having others made to replace them. The original set contained twenty-five cards, but your committee has somewhat revised them, and the set now comprises twenty-one cards, a number of which are present for your inspection this evening. It is the intention to place a set of these with each provincial committee for use in educational work and to sell others at cost price to school boards desiring them. At present a number of orders are awaiting the completion of the cards.

A set of five similar cards, especially suited for use in military dental surgeries, was prepared by Capt. Arnold Semple, a member of the committee, and these were sent out to all military districts throughout Canada. The demand for them proved greater than the supply, but the needs of the various surgeries are now being sought, and more will be printed to supply all required.

Capt. Semple also prepared a small pamphlet of "Instruction to Soldiers in the Care of Their Teeth." Twenty thou-

sand of these were printed, but it will be necessary to obtain more, as the requests in hand now will more than exhaust the supply. These little pamphlets were to be handed to the soldiers upon completion of their treatment in the military dental surgeries.

It might be of interest to the members to hear a little of the comment of the officers commanding the military surgeries upon the cards and pamphlets:

Major Bruce, Military District No. 13, Calgary: "These leaflets, I believe, will be a great means of education to our soldiers on the subject of oral health. The cards are very attractive, as well as instructive, and, by keeping the same constantly before the public, should go a great way toward assisting the work which your Association has for its object."

Major Bradley, Military District No. 4, Montreal: "Your educational cards would be a decided value to us here in Military District No. 4. I had the opportunity of going over them with Major Wright in Winnipeg last summer, and regret to say that, possibly through my own neglect, we never had anything of the kind in our clinic."

Major Dubord, Military District No. 5, Quebec: "I have the greatest praise for the C.O.P.A. in their good work for the Canadian soldiers, in publishing both the dental educational display cards and the leaflets. One can easily notice, especially at the big camps, and in the summer, that the men, after reading these advices, as we call them, seem to know more and better appreciate the work that the C.A.D.C. does for them. These cards and leaflets certainly do more good to a soldier than all the individual lectures a dental officer could give to each of his patients. The first method saves a precious amount of time."

Major Magee, Camp Aldershot, N.S.: "Received your military leaflets and wall display cards. Many thanks. I trust that with their aid our efforts at instruction may bring forth a considerable harvest."

Major Shaw, Military District No. 1, London: "The cards and leaflets have been found excellent. The leaflet is well written and contains the necessary instruction in concise and readable form. I consider the idea an excellent one."

Major Thomson, Military District No. 6, Halifax, N.S.: "The booklets are excellent, and we can use a few thousand of them. Why do you persist in using the word 'clinic' when the word 'surgery' has been adopted by the Canadian Dental Association?"

Major Wright, Military District No. 10, Winnipeg: "I consider the cards very valuable from an educational standpoint; they always draw forth very favorable comment from anyone interested in our work. They are fine and will render us invaluable service."

Your Committee feels that both the military cards and the leaflets are falling continuously upon fertile soil and will surely produce good results.

Capt. Semple has under consideration now the preparation of an outline for an evening's entertainment in military camps, hospitals, etc., consisting of dental educational and comic films, concert numbers, a short address on mouth hygiene, etc.

Early in the year the skeleton lectures compiled by the late Dr. Doherty were completed. Your Committee went over these and revised them somewhat. One was considerably enlarged by Dr. Nicholls, and a number of new slides added, making an interesting as well as instructive outline. There are four of these outline lectures under the following headings: "The Teeth. Their Use and Abuse"; "Mastication"; "Children's Teeth"; and "Tooth Decay, Cause and Prevention." Your Committee has now a great number of lantern slides to illustrate these lectures.

The lectures with slides have been sent out to a number of men who have given talks in various parts of the Dominion, from Edmonton, Alberta, in the West, to Moncton, N.B., in the East. The secretary has several letters from men to whom these "outlines" and slides have been sent, expressing appreciation of the service which they have rendered in preparing addresses on oral hygiene and the possibilities of dental treatment. It will be necessary to have a further number of copies of these outlines typed or printed, as it is not always possible, and perhaps not desirable, to have them returned.

In sending out the lectures, the secretary recently has been enclosing also different educational pamphlets which have been printed from time to time by this Association as it was felt that they contained considerable information which might be of value to men in preparing a talk on dentistry.

The Association's moving picture films have also been all over the country, and the comment seems to favor this means of presenting the subject to the public. There is so much demand for the films that it was considered desirable to obtain another copy of the "Oral Health" film, which has been ordered from the Oral Hygiene Committee of the Dental Society of the State of New York. Your Committee has now two copies

of the "Toothache" film, and will have two of the "Oral Health" one.

The Provincial Board of Health of Ontario is still using both our films in their exhibit, and through this agency they have been shown in a large number of places in Ontario to good audiences. Mr. Jones, who is in charge of this work, tells us that in the near future his department is going to conduct a Child's Welfare Campaign, in which it is desired to have the assistance of dentists in the cities where the campaign will be carried on.

A special committee is working on the problem of producing a film illustrating the proper method of brushing the teeth with Hutax brushes. A member of the Association has about ready for the press also a pamphlet on the "Care of the Teeth and the Proper Method of Cleansing the Oral Cavity."

Two other members of the Association are preparing a number of newspaper articles for the press under the following or similar headings: "Prophylaxis," "Where the Baby's Teeth Come From," "Proper Diet of Children During Dentition," "Why Do Teeth Ache?" "Nerve Strain of Children and Some of its Causes," "The Relation Between Tooth Ailments and the Morals of a Child," "The Cause of Irregularities of the Teeth," "How Do Decayed Teeth Spread Contagious Diseases?" "Mastication," "Effect of Certain Foods Upon Teeth," "How to Brush the Teeth," "Dental Fees," "Materials for Filling Teeth," "X-rays in Dentistry," "Should Teeth be Extracted?" "Pyorrhoea—Its Prevention," "How Pernicious Habits Affect the Teeth," "The First Permanent Molars and their Importance in the Dental Structure," also upon "Dentures," "Crowns," "Bridgework," "Inlays," etc. A number of these articles are ready, and your Committee is endeavoring to make arrangement for their publication over a very wide area.

A pamphlet is also under way, which will be sent to all dentists in the Dominion. It is expected this will contain cuts of the school cards, announcement of the outline lectures, moving picture films, etc., also the "Aims of the Association" and an advertisement for Hutax products. The newspaper articles might also be mentioned in this pamphlet and the dentists urged to secure their publication in the local papers of their district.

During the year your Committee felt that the number of its members should be increased, on account of the multiplicity of duties devolving upon it, and suggested to the executive

that two more men be appointed. The executive agreed, and the president appointed Dr. Gausby on this committee, but the second appointment was not made. This Committee would respectfully suggest to the Association that seven, instead of five, members be elected on the incoming Educational Committee.

All of which is respectfully submitted.

HORACE E. EATON,
Chairman.

GEORGE W. GRIEVE,
Secretary.

Toronto, January 21st, 1918.

**AN INVITATION TO THE CANADIAN DENTAL
ASSOCIATES TO MEET IN CHICAGO WITH
NATIONAL DENTAL ASSOCIATION
AUGUST 4TH TO 9TH, 1918**

The secretary of the National Dental Association, Dr. Otto E. King, was directed by the executive to extend to the Canadian Dental Association an invitation to meet with them in Chicago, August 4th to 9th, 1918. The secretary says in the invitation that the members of the Canadian Dental Association will be the guests of the National Dental Association, and that room will be provided for holding meetings for the conduct of C. D. A. business, and that the C. D. A. will have the privilege of providing the program for one of the general sessions as well as assisting in the clinical program. Could anything be more generous, more fraternal or more allied. The Canadian profession cannot but feel a deep sense of pride in being invited to be guests of the largest and most influential organized dental body in existence, not only the guests but to have a part in the program.

NATIONAL ASSOCIATION OF DENTAL FACULTIES

The next annual meeting of the National Association of Dental Faculties will be held in the Green room of the Congress Hotel, Chicago, Ill., August 2nd, at noon. The Executive Committee will meet at ten a.m. on the 2nd. The meeting will continue through August 3rd.

CHAS. CHANNING ALLEN, Secy.,
N.W. cor. 10th and Troost,
Kansas City, Mo., c-o K.C. Dental Col.

AMERICAN INSTITUTE OF DENTAL TEACHERS

At the last annual meeting of the American Institute of Dental Teachers, held at Pittsburgh, Pennsylvania, January 29 to 31, 1918, the following officers were elected: President, Dr. A. W. Thornton, McGill University, Dept. of Dentistry, Montreal, Que.; Vice-President, Dr. R. W. Bunting, Ann Arbor, Mich.; Secretary-Treasurer, Dr. Abram Hoffman, 381 Linwood Avenue, Buffalo, N.Y.; Executive Board, Dr. A. D. Black, Chicago, Ill.; Dr. G. S. Millberry, San Francisco, Cal.; and Dr. A. H. Hipple, Omaha, Neb.

The next annual meeting will be held January 28, 29 and 30th, 1919, the place of meeting to be announced later.

DENTAL OPERATIONS

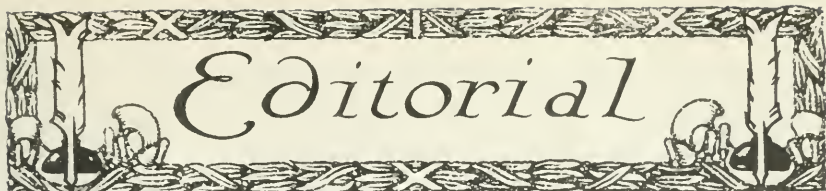
*Performed by Officers of The Canadian Army Dental Corps,
In England and France from October 1st to December
31st, 1917. And also showing the Grand Total of
Work Completed since July 15th, 1915.*

Total Operations Reported to	Fill- ings.	Treat- ments.	Den- tures.	Prophy- laxis.	Extrac- tions.	Devital- izing.	Total.
Sept. 30th, 1917	478,279	155,461	94,026	67,106	340,395	51,891	1,187,158
October, 1917	26,176	13,723	4,488	5,917	12,326	2,333	67,963
November, 1917	27,163	14,169	4,613	5,470	10,948	2,342	64,705
December, 1917	22,752	12,779	3,831	5,230	9,045	2,166	55,808
Grand Total	554,370	196,132	106,958	86,723	372,714	58,732	1,375,629

J. ALEX. ARMSTRONG, Col.,

Director of Dental Services,

O. M. F. of C.



EDITOR:

A. E. Webster, M.D., D.D.S., L.D.S., 3 College Street, Toronto, Canada.

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QUEBEC.—Eudore Debeau, L.D.S., D.D.S., 396 St. Denis Street, Montreal; Stanley Burns, D.D.S., L.D.S., 750 St. Catherine Street, Montreal; A. W. Thornton, D.D.S., L.D.S., McGill University, Montreal.

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MANITOBA.—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA.—H. T. Minogue, D.D.S., L.D.S., Vancouver.

VOL. XXX.

TORONTO, APRIL 15, 1918.

No. 4.

JUSTICE HODGINS' REPORT AS IT AFFECTS THE DENTAL PROFESSION IN ONTARIO

The School of Dentistry established by and under the control of the Royal College of Dental Surgeons of Ontario is, so far as I can judge, fulfilling its functions satisfactorily. Its profits are large, and are paid over to the Royal College, which, in my judgment, needs no such yearly surplus as it at present has, and as it will receive in the future.

The recommendation I make is one which will, I have no doubt, appeal to those conducting the affairs of the profession, and it will, if carried out, enable the University and hospital authorities further to assist in the education of the dental students. It is that the net examination fees be paid over to the university or universities aiding in the necessary medical education of dental students to be spent by the medical faculty in providing increased facilities of and equipment for medical education.

I have also set out and discussed the financial statement of the Royal College in the supporting statement, and have there given my reasons for this recommendation.

In another part of the report appears the recommendation of an officer whose duty shall be to act as adjudicator on matters of disputes on fees occurring between patient and dentist. The purpose of the officer is to avoid the publicity of a suit in court. The officer's adjustment will not be final, but the onus of going to court will fall upon the dissatisfied.

It is also recommended that the members of the Medical Council and the members of the Board of Directors of the Royal College of Dental Surgeons shall no longer be paid for their services. The Commissioner says that the honor conferred should be sufficient recompense, and that no other directors of colleges, universities or schools collect fees for their services.

CAMP LEE, VIRGINIA

Camp Lee is situated about three miles from Petersburg, Virginia. The ground is dry, rolling, partially wooded, and well drained. From points of elevation miles and miles of wooden buildings can be seen stretching over the high land with large training grounds flanking each side of the rows of buildings. A street railway runs from Richmond, twenty miles away, through Petersburg, directly into camp. All the buildings are of wood and not painted, in contrast to Canadian military camps, where the men are housed under canvas. Forty thousand men had been trained in Camp Lee during the past months. Many thousands have been sent out, and many more are coming in.

The dental arrangements are a little different from our large camps. Ours are centralized, while those in Camp Lee are separated. There are ten dental surgeries manned and officered in different parts of the camp. The main surgery is located near the entrance in the same building as the eye, ear, nose, and throat services. Lieutenants Sleppy and Williams are in charge. The rooms are spacious, well lighted, well furnished, and well kept. The equipment is of the most modern type. All kinds of modern operations are undertaken, and if one might judge from a monthly report sheet, there are no idle moments in the dental service.

Infections of the mouth and teeth in a given case should, as a rule, be rectified first. Tonsillectomy, as now so commonly practiced before the condition of the teeth has been corrected, is illogical. The lymphatics of the mouth and teeth drain into the tonsils.—(Rosenow).

FREE DENTISTRY IN NEW ZEALAND

The Auckland Hospital and Charitable Aid Board established in 1909 a free dental department for the benefit and accommodation of those who are not able to have their teeth properly taken care of in the community, since which time 23,555 persons have made application for treatment. During the period 18,530 teeth have been extracted, 11,919 fillings put in, and 1,264 vulcanite dentures made.

The staff at present comprises two dental surgeons and two attendants, besides a number of honorary members of the staff who have given their services free of charge. In return for this free service the hospital board has given the dental association free use of a portion of the hospital for housing a valuable dental museum presented by a prominent individual of this city.

It seems that at present there is no very marked shortage of dentists in this part of New Zealand at least, but owing to the additional year added to the course of study, making it four years in order to graduate, there are but few young men willing to give that time to enter the profession.

Editorial Notes

Dr. J. J. Wisser, formerly of Walkerton, Ont., later of Kamsack, Sask., died suddenly October 9th, 1917.

✽

Col. J. Alexander Armstrong, Director of Dental Services for Canada in England, has been honored by having the title conferred upon him of C.M.G.

✽

A first year dental student of Laval University, Montreal, conceived the idea of selling the examination questions to his classmates at \$10 for a pass and \$20 for first place. The poor fellow was caught months before the examinations came on because of having accepted \$10 from a letter addressed to a fictitious name.

✽

During the period of greatest effort along the lines of filling teeth with gold foil, much attention was given to the condition of the tooth tissues covering the pulp, but since the introduction of gold inlaying there seems to be a more or less disregard of the tooth tissue covering the pulp. It is a practical impossibility to leave softened or much decalcified den-

time under a gold filling, because its presence interferes with the cohesion of the gold. The inlay is different; decay in no way interferes with making or setting. The practice of leaving decay and decalcified dentine in the bottom of a cavity until the inlay is made, has general acceptance, but no one should be deceived by this practice into not removing such decay before the inlay is set. From observation of a number of dentists, it would seem that decay is not being as thoroughly removed as in former times. There is no more reason for leaving decalcified dentine under an inlay than under a filling.

Obituary

CAPTAIN W. GORDON McNEVIN DEAD

Captain W. Gordon McNevin died at Gravenhurst sanitarium, Sunday, February 17, 1918. Capt. McNevin, or Gordon, as he was known to his friends, was born at Exeter twenty-four years ago, but spent his boyhood in Goderich, attending the public school and Collegiate Institute there. He went in for dentistry and had practically completed his course at Toronto when he enlisted in the spring of 1915 with an artillery unit at Kingston, afterwards transferring to the Dental Corps. He went overseas in June of the same year, and after a short while in England crossed to France, where he remained for over a year. He contracted a severe case of bronchitis, which afterwards developed into pneumonia, and being seriously threatened with tubercular trouble he returned home in May of last year and went to Gravenhurst for treatment at the Cottage Sanitarium. He seemed to make some improvement, but about two weeks ago tubercular meningitis set in, with the usual fatal result. The remains were brought to Goderich, and the funeral took place from the home of his father, Mr. W. J. McNevin, Victoria street, to Maitland cemetery. Rev. R. C. McDermid conducted the funeral services, and the pallbearers were Chas. K. Saunders, Roy Sparling, Dr. L. M. Mabce, Dr. H. G. MacDonell, Ernest Colborne and P. L. Walton. Besides his parents, deceased leaves a wife, to whom he was married in 1915, and a baby girl; also two sisters, Mrs. A. H. Hord, of Wolseley, Sask., and Miss Rose, of Toronto.

FOR SALE.—Foot lathe complete, cheap. Apply Dr. J. B. Lundy, Port Perry, Ont.

Dominion Dental Journal

VOL. XXX.

TORONTO, MAY 15, 1918.

No. 5.

Original Communications

ORAL SEPSIS

H. B. ANDERSON, M.D.; L.R.C.P. (Lond.); M.R.C.S. (Eng.).

Read before the Odontological Club, Toronto, March, 1918.

I find it difficult to speak to dentists on a subject, regarding most of the aspects of which, they know so much more than a physician. That you should invite me to address you is evidence of the broad spirit and openmindedness of your profession in seeking the co-operation of both medicine and dentistry in the elucidation of a most important subject, in which we are mutually interested. Broadly speaking, your training and work give you the best opportunity to study the local conditions in oral sepsis, ours to study the systemic effects. We must therefore collaborate to get the fullest and most accurate knowledge of the whole problem, and especially of the therapeutic side, where our respective fields overlap. The scientific spirit and capacity for self-criticism which the leaders in the dental profession have shown in attacking a subject in which they have so personal an interest is beyond all praise, and is the best guarantee that we shall be able to work together harmoniously in establishing reliable data and in making safe deductions therefrom. Is it not time that there was a closer relationship between our two professions? Dentistry is as much a special branch of medicine as the eye, ear, nose and throat, and before long I hope we may have well organized dental departments in all of our hospitals and a section of stomatology in the Academy of Medicine.

At the present time we may divide the members of our respective professions into three groups, according to their attitude on oral infections:

1. The ultra-conservative group, including the reactionaries, who look upon it as merely another of those passing fads or fashions in practice, which afflict us from time to time,

eventually to be discarded like others which they can readily point to.

2. The enthusiasts and hobbyists, who run every new idea and theory to extremes, who are ready to generalize on the most limited experience and data; who have not the capacity or do not appear to have learned the necessity for accurate and critical reasoning from abundant and well established facts, nor the therapeutic pitfalls which beset the way of *post hoc* reasoning.

These two classes serve a useful purpose as the antigens and the antibodies of the *corpus medicus*, which tend to neutralize one another and thus give the normal organism a chance to perform its allotted functions for the benefit of the community.

3. The third class, which obviously includes ourselves, is studying the question critically and with an open mind, patiently collecting data, sifting the evidence, and, ever mindful of their frailties and past experiences, avoiding unwarranted conclusions and hasty generalizations.

Our experience with oral sepsis appears to be in many ways another example of the remarkable limitation of human observation and reasoning in regard to what, studied in retrospect, was a very common and obvious cause of disease, as evident as the infectiousness of tuberculosis or the symptom group of Grave's disease or appendicitis.

In devitalizing teeth, buttressing up infected teeth which should have been extracted, sealing up infection under crowns and bridges, improperly filling canals, or not filling them, incautiously using strong antiseptics, such as arsenic, or causing injury to tissue by direct trauma, we were violating scientific principles and thus treading on dangerous ground.

Time does not permit, and it would be entirely out of place for me to attempt to speak on all the important aspects of oral sepsis, even if I were capable of doing so, which I am not. I will, therefore, pass over, by merely mentioning, a number of important matters upon which those whose opinions are of value, are, I believe, practically agreed, and shall deal more fully with a number of unsettled or controversial points.

To enumerate, I take it, all agree as to the serious importance of oral infection, of the danger associated with devitalized teeth, with crowns, bridges and peg teeth; the great importance of root fillings in relation to periapical infections; the danger from arsenic and other irritating antiseptics, causing necrosis, scar tissue, etc., thus producing a *locus minoris*

resistantiae which predisposes to infection and abscess; that pyorrhoea is less liable to produce constitutional disease than root abscesses, as drainage is better in the former; that abscessed teeth are a menace to health, and may produce serious constitutional disease, or even death; that extraction is often the only safe procedure to remove infection, and will be done more frequently in the future than in the past; that it is difficult to disinfect a chronic apical abscess, and especially so in the lowers and in teeth with narrow and crooked root canals; that periapical and marginal infections are frequently related etiologically to infective arthritis, myositis, fibrositis, neuritis, lumbago, sciatica, so-called rheumatism and allied conditions, as erythema multiforme, erythema nodosum, chorea and tonsillitis; also to heart infections, myocarditis, endocarditis, simple or malignant; to generalized infections, haemolysis, anaemia, etc.; that the streptococcus viridans or other form of streptococcus is the usual infecting agent. While there are many signs presented by ordinary local examination suggestive of root infection, yet in many cases these are insufficient for diagnosis even by skilled and experienced dentists and physicians. X-ray examination is of great value, but even this may fail us in some cases. The X-ray may show rarefaction, but this does not say whether there is any active infection or whether it is altered tissue where the infection has died out, any more than it can say with certainty whether a lung shadow is that of an active or healed lesion. Other clinical evidence must be taken into consideration. We must remember, on the other hand, that at an early stage of infection the bony and other tissue changes may escape detection by the X-ray, as they do in early osteomyelitis affecting the long bones.

It is hardly necessary to emphasize that a thorough examination of the gums, teeth and throat should be part of the ordinary routine investigation of the physician.

One may therefore pass over the above-mentioned points to consider those of a more controversial character, or still under investigation, as well as to mention some of the more unusual systemic manifestations of oral infections.

Just here may I say a word regarding the position of the physician on oral infections. Some dentists—but I am glad to say not many—take exception to what might appear an invasion of their territory. The physician, however, as I said before, has the best opportunity of studying and understanding the systemic effects of oral infections, and of comparing

them and their results with local infections elsewhere in the body. We physicians are responsible for the care and treatment of patients suffering from systemic disease, and we must satisfy ourselves in a given case, personally or by consultation, as to whether oral infection is responsible for, or contributory to the patient's illness, and also if the dental treatment carried out has removed the possible source of systemic poisoning. The dentist is best qualified to know the value and limitations of dental treatment in a given case, and therefore to say whether extraction is necessary, or if he can treat the case successfully by conservative means. If the case does not clear up satisfactorily the dentist should be ready to reconsider it, not only from the local, but with the physician, from the general point of view as well.

The removal of the primary foci of infection, whether in the teeth or elsewhere, does not necessarily mean cure of the condition dependent upon such infection. The damage may have already been done.

The patient's failure to improve, therefore, after an oral sepsis has been removed does not mean that this may not have been the original source of trouble. Personally, I never promise results, but take my stand on the ground that an infection when present should be cleared up, whether by conservative or radical means, depending upon the dentist's ability to deal with it. Such dental treatment, of course, should go along with the building up of the patient's health by appropriate general measures. This is a point which is too frequently forgotten.

The importance of trouble—short of definite abscess formation—what the radiologist gets round by describing as "rarefaction of bone," "thickening of peridental membrane," etc., requires careful investigation. These are the most difficult cases to interpret and to understand their clinical significance. We all know that many cases, even with definite abscess formation, may go for a long time without producing evidence of systemic ill-health. The latter depends upon the degree of systemic resistance, the character of the infecting bacteria, number and extent of infective foci, etc. In the same way all persons exposed to any other infection—typhoid, tuberculosis or pneumonia—do not succumb to the disease.

The infection is none the less a real danger, however, as it furnishes an efficient cause ready to take advantage of any morbid opportunity for disease. Rosenow has shown in his work on gastric ulcer that insignificant foci may be the start-

ing point for general infection. To say that the local condition in rarefaction is due to the action of irritants, such as arsenic, or to traumatic causes, does not disprove the co-existence of infection, as such causes, by reducing the local resistance, predispose to it. We know regarding infections in general, that the smallest point may be the port of entry. It is therefore not necessary to have many or large areas in order to produce serious systemic trouble in susceptible cases. Therefore it is not sufficient to remove only gross lesions—a single point may be sufficient in some cases.

It would be of great value to be able to obtain cultures in these cases wherever the opportunity presents itself. Considered from the viewpoint of general pathology there is reason to believe that by increasing the patient's resistance many of these slight infections may be overcome. The periodicity of attacks in gastric and duodenal ulcer, gall-bladder infections, arthritis, etc., with longer or shorter intervals of absence of active symptoms, where the primary focus of infection has not been removed, suggests that it may have been at least temporarily overcome by increase of the patient's local and general resistance.

Rosenow's work on infections has been of the greatest scientific importance, as it has helped to clear up and co-ordinate many previously disjointed and fragmentary observations and partial truths. I refer especially to what he says regarding transmutability of organisms and selective tissue affinity. We can now more readily understand why at one time an organism may produce root abscess or tonsillitis, gastric or duodenal ulcer, appendicitis, gall-bladder infection, infective arthritis, etc., and therefore why these conditions are often inter-related and may have a common source of origin. The recognition of the importance of this inter-relationship of disease will have an important bearing on not only the prevention, but the treatment of many diseases in the future. In all probability it will reduce the frequency of operations, because it is obvious that if oral or other focal infections may cause gastric and duodenal ulcer, cholecystitis, appendicitis or Grave's disease in many cases, our present surgical methods are attacking the problem at the wrong end, removing the results rather than the cause; because, if the primary source of trouble remains, the removal of an organ or tissue secondarily infected does not go to the root of the pathological process. Recent investigations go to prove the contention of physicians as to the frequent incompleteness of cures by op-

eration in Grave's disease, gall-bladder infections, etc., and in future by removal of the primary source of trouble we may hope to lessen the frequency of these diseases, or get better post operative results. Rosenow has shown that infections from the teeth or tonsils to the alimentary tract are usually through the blood-stream, and not by local extension.

In addition to the diseases before mentioned in which oral sepsis may be the starting point, there are others to which attention has not been so commonly directed, and which deserve careful observation and further investigation. Among these one may mention exophthalmic goitre, of which I have seen a number of cases where there was very conclusive evidence that oral sepsis was the cause of acute symptoms developing.

In certain skin diseases, such as the erythema group, purpura, some cases of eczema, and I believe in some cases of lymphangitis, scleroderma and Raynaud's disease, oral infections should be borne in mind as a possible cause.

Oral infection may also be contributory to the development or aggravation of arterial hypertension in some instances. There is no clinical doubt that it may be responsible for nephritis and infections of the urinary tract.

Apart from gall-bladder infections, involvement of the liver itself, with recurrent attacks of chills, fever, hepatic enlargement and jaundice occur at times. Cervical adenitis, tonsillitis, etc., are commoner and more obvious results which should be borne in mind. Billings and others have reported cases with the clinical picture of disseminate sclerosis; also cases of iritis presumably due to this cause.

In addition to cases where there is a definite regional localization, others of a more general character occur in which there is more or less malnutrition, dryness of the skin and nervous symptoms of the neurasthenic type—insomnia, fatigue, palpitation, flatulency, etc., where oral sepsis appears to play a part.

In conclusion, I would caution against too hasty and sweeping generalizations, but urge that each suspected case be carefully and critically investigated to determine if oral infection is responsible for or contributory to the symptoms. In my opinion teeth should not be sacrificed on the advice of the physician; a competent and experienced dentist is best qualified to advise as to the applicability of limitations of dental treatment. In many cases the interests of the patient will be best secured by consultation between dentist and physician.

(After the presentation of the above paper, Dr. Harold Tovell exhibited lantern slides of X-ray plates, showing the oral condition associated with various clinical cases referred to.)

MOUTH BACTERIA

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Read before Canadian Oral Prophylactic Association.

(Concluded from April issue)'

The second problem is: the research men in the society concluded, after two or three years of observation, that these facts had been made out so definitely and conclusively that it was possible to turn in another direction. I said a little while ago, as I touched on the question of cleaning the teeth, that if we keep them by these various means entirely clean, if complete and effective superficial cleanliness will prevent decay, then we will have succeeded. We have been studying two other problems, and the second one bears on that assertion. We are trying to find out under the auspices of these two research organizations whether teeth vary in any material way from the inside, or underside of the enamel. Has anybody shown that they do not? Does dental literature show conclusively that they do not? I am not saying anything; I am asking questions. Does dental literature show that teeth will not in places, in spots, undergo disorganization from the underside? Does dental literature show that all enamel on all teeth is perfectly formed at the time of formation originally? Does dental literature show that during adolescence decay is more frequent than at other times? And if so, has it shown why? Does it follow it is due to systemic alteration in the person; or may it be just at that period when initial defects in the enamel to start with are in a sense in that way showing their presence? Can anybody answer these questions? I am assuming these remarks may be discussed, and I am putting tantalizing questions, because I am here not only to discuss, but to learn. Has any dentist shown when decay suddenly seems to strike a person, to the amazement of everybody involved, that it is due to a cause then active, excluding a prior cause; or has anybody shown it may be due to defects that are now showing simultaneously? If men may develop in families, generation after generation, rheumatism at forty or diabetes at thirty-five, or cataract at fifty, may there not be defects in the enamel, while not so effectively timed, which may have run along and show themselves at such periods as to lead the dentist to think that during the last few months something has been going on? Does it follow that what we find in the chair is necessarily due to causes that began to act since the last visit? These are questions difficult to answer,

and while we may believe a lot I am sure we know relatively little about them. Now we have raised this question, does enamel undergo any abnormality during its development that we can induce artificially? If it does undergo abnormality when produced through artificial intervention, is it a uniform abnormality? Can we make it abnormal in spots and can we make it abnormal universally? We have assumed as a working hypothesis that in all research work, first we must have a conviction that we are ready to abandon when facts require; a surgical operation ought not to be necessary at such a time. A man who starts with a working hypothesis and feels it is humiliating to give it up is the type of man that is bedevilling dental science and has no place in the career of the investigator. He ought to have pride in achievement in revealing the truth. He ought to have the same pleasure in saying, I was wrong and you are right as in saying that the other fellow was wrong and he was right. It is the other spirit that is leading us to have so many partisans on the root canal proposition—not enough open-mindedness and too much emotion.

We have endeavored to find out, if we can, just what the facts are, and our working hypothesis was that the glands in the body that are notably inefficient in co-ordinating must have something to do with the production of the teeth. You are aware of the fact that when the sexual glands are removed the individual that develops afterwards is a far different individual than when they are there. We know the sexual glands produce substances that are absorbed into the blood continuously and that the function of these substances is a physiologically continuous function, especially shown actively during the period of puberty, during the period when the secondary sexual qualifications of the male and female rapidly develop and become striking. Just as those are popularly understood phenomena and facts, so we find in the study of physiology that one part of the body will do this or another if increased or decreased. We know a certain abnormality in the brain will lead to a remarkable extension of the body; the feet will become excessively large, the jaw bone may do so, the hands may do so, and it has a tendency to acceleration of extension. We notice that that part of the body must have a profound influence on the growth and mineralization and calcification. We know that when thyroid is interfered with by disease then an individual may be dwarfed. Again we know there is marked disturbance of calcification and ossification. We know when the thymus, which is above the heart in infants,

is normal, there is a healthy growth, and when that thymus is removed in part or in whole, or when it is diseased, that growth is interfered with. Let me give you two illustrations of the driving effect of the thymus and thyroid. Tadpoles we are all familiar with as organisms that rapidly grow from one stage to another, from the tadpole stage to the frog stage. A little tadpole can be watched day after day going from the tadpole to the frog stage; you see little limbs come out on the side and so on, and it is all a matter of easy observation. Take a certain number of tadpoles from a given supply, feed one-third of them with thymus from oxen or any other animal, feed another third with thyroid, and feed another third with meat, and note what happens. Those that are fed with meat go on as pollywogs through ordinary development to frogs; those that get thyroid go to the miniature frog condition, they become precocious frogs, whereas those that have been given thymus become giant tadpoles, they do not take the form of the frog. When thymus and thyroid work together in you and me, they have given us this miserable composite, whatever it may happen to be. We may be so long, so wide, so thick, whatever the phenomena are, and are very apt to be regulated by these two effects. Parturea(?) has something to do with it. Parathyroid is the very minute gland situated beside the thyroid. The parathyroid gland in the throat of the human individual is hardly larger than a small grain of corn. If we take the parathyroids out, convulsions severely ensue, and there is a marked disturbance of the calcium. If they are taken out of the race, the young race, nine out of ten, will fail to live, they die in convulsions, but now and then if we use a sufficiently large number, one will overcome the convulsions and have resistance enough to live through it. When that animal does survive, the teeth are very poorly calcified. The abnormality due to the subtraction of this gland causing disturbance in the calcification. With these facts before us, what ought the earnest investigator to conclude? If all these glands and all these disturbances will affect ossification, extension, placement, why should not one of them or a combination of them have much to do with the teeth? We have gone ahead studying this proposition from the standpoint that we have mentioned, and thus far we have found that some calcinous additions cause better calcification, some have no effect, and some impair. We have found that some subtractions do the same—additions and subtractions have effect. I am not going into the details of this, for it is too long a story; what I wanted to

go through this far was to speak of or to lead up to this thought, that among the things we did to answer the broad question was to find out whether anything could go from the blood into the developing enamel, for if nothing could go from the blood into the developing enamel, there wouldn't be any use studying this at all. We did suppose that they might affect the salt that would make the enamel and would hold them in reserve, and we started always with a working hypothesis, right or wrong, we don't care, something to go on; if it is right, well and good, if it is not, it doesn't matter. The working hypothesis is that something will go through the enamel, will go into the enamel if it is in the blood, and is there while the teeth are forming. Now, many coloring matters may be introduced into the body which will be widely disposed all through the body and show themselves. Some coloring matters when introduced into the body will disappear. In the treatment of the sleeping sickness, one of the coloring matters that was recommended for the destruction of the organism that is responsible for it, was what is called now tripan blue. There is also a tripan red and quite a number of others that are among the so-called pansoden dyes. When these coloring matters enter the body they kill some germs. They do not enter the nervous system to any degree, which is a safe feature, but they distribute all through the blood, all through the body. An animal receiving an injection becomes tri-blue. If we take an albino rabbit and inject tripan blue into the abdomen, in a few minutes you can see the animal is certainly looking bluer than it feels; it plays around the place entirely happy and steadily gets bluer, bluer and bluer; the whites of the eye take on a blue, the red gets purple, and if you make a few such injections at intervals of a few days, you can get a rabbit that looks as if it had been painted blue. The only thing about it that doesn't get blue is the hair and nails, there being no circulation into the tip of the nail and hair, and no color has a chance to go up; but if one performs an autopsy, it is amazing to see how blue it is. I don't recall any blue color I have ever seen that is as intense as some of these blues we have induced in rabbits in this way. White rats, dogs and human beings all take on this striking blue color. That color slowly fades. We injected the tripan blue into rabbits, rats, guinea pigs and dogs at various stages in the development of the enamel, so that we would inject some of the animals when the whole of the teeth had erupted, some of the animals when the second teeth had undoubtedly formed in large degree but

had not erupted, some of the animals when the first teeth had not appeared, as in the case of very young rats; they were there but had not erupted; and so we made injections in all gradations, and we found this, that whenever the tripan blue circulated in an animal, it went into all of the enamel that was being formed. I have two dogs (?) in our laboratory yet, having shown two of them at the meeting of the National Dental Association in October, which had received injections of tripan blue when they were very small, the last one received on the 23rd of last July; the teeth had not yet erupted; and those teeth are blue from the top of the crown to the apex of the root. They are blue in all parts, although now we know from extractions that the pulp has lost its blueness, but the enamel is still blue and has not faded, or if at all, the fading is so little as to be practically negligible. There is a foreign substance of the kind that is not diffusible. It is a so-called collodiol substance; that substance freely moved around in the enamel cells; it was undoubtedly thrown into the enamel much the same as dirt or any extraneous matter would be thrown into a wall when brickmakers are putting up a wall. It shows conclusively that abnormalities in a person that may be registered through the blood or in any general way in the enamel cells will lead to imperfections, placements, displacements and modifications of the enamel. Here is an ocular clinical demonstration of the fact that enamel is subject to influences that may be shown to the eye while the enamel is being formed. Now we naturally thought of a question that sooner or later should be asked: did any of that tripan blue go into any part of the tooth that had been formed? And the answer to that question is no, it didn't. The enamel that was under the gum line that had been formed, though the coloring matter was freely circulated, didn't enter the enamel, and none of the enamel that was outside and beyond the gum line was at any time affected by this treatment. While the coloring matter goes up into the pulp and permeates it perfectly and makes it a deep blue, most painfully blue, and you imagine it must have hurt terribly—while it will go to the full extent of the pulp and will go into the dentin, it won't go into the enamel. We have tried other things, such as arsenic, and the result of it all is we have undoubtedly found that substance will go into the enamel while it is being made and will make that more or less perfect, rarely more; and I believe that it must be conceded that some features of decay may be (I emphasize "may be") typical of that kind of deficiency in the enamel which

will show itself after some years of ordinary contact of hostile conditions in the mouth. Certain spots may be more or less susceptible by reason of deficient formation.

Another matter of interest comes to mind, and that is the chemistry of the enamel. Enamel is nominally a homogeneous film that may be regarded as entirely uniform throughout its mass, and made in a way that would render imperfection difficult. It is just the opposite. It is made of a very compact, dense, prismatic structure, these prisms being held together by material of similar composition though not in form. In effect, it is much like saying the enamel is made of cells of hexagonal prisms in a certain direction and then track these prisms very slightly with a similar substance chemically. Think of the possibilities of variation in that structure alone. Enamel does not shoot out into crystalline forms right away, one after another. It is like building a tall chimney, and the slightest deviation in the courses involved would mechanically change it and change its angle of approach, would tend to make it convergent or divergent according to circumstances, and would tend to make the deposit resistant or not, and might mean that the outer surface of the enamel through a certain distance here, there and elsewhere, would be resistant and would not be any other place. It seems to me it is a perfectly sound hypothesis that enamel is just like every other part of the body, and when it is being made it is subject to variations in quality that will not show by ordinary inspection. Now, the composition of enamel is, so far as its pure chemistry is concerned, ordinary calcium phosphate is molecular combination which gives this product an unusual resistance to attack and dissolution. We know calcium phosphate dissolves very readily in acid, but we know that the combination in the mouth does not dissolve readily in acid. It will dissolve with repeated focal attack and repeated molecular production, like water dropping on granite, there may be a wear and tear there. But in the case of enamel we know that calcium phosphate is combined molecularly with calcium muriate or calcium chloride, or both, and we get the equivalent of calcium phosphate in the mineralogical apatite, present all over the earth in enormous masses, and interestingly enough whenever we find it it will be found to have hexagonal crystals. It stands weathering influences. That product as we find it in nature is calcium phosphate, calcified fluorid or sometimes a calcium phosphate and calcium fluorid combination, an alliance between the two that makes this a very resistant combination. In enamel we

find that there is more carbonate than ever appears in apatite, and the results we are now getting in the laboratory show the carbonate part that becomes part of fluorin and chlorin is variable to a surprising degree in teeth.

Now I feel that we are going to find in this relation, as we have in some others, as we did years ago in the iodine proposition—we now know that iodine in small quantities is absolutely essential to the life of each of us, that our thyroid gland cannot perform its labor unless it receives from time to time small amounts of iodine; we get that in water and in food and in various ordinary ways; when we do not we develop goitre. One reason why the painting of goitre with iodine has so long been effective is because that iodine goes in and replaces the iodine that is missing, and in Switzerland, where water is the chief source, and in some portions snow water without iodine, goitre is endemic.

Fluorin is talked about more or less frequently as a normal physiological constituent, but nobody has laid any stress on its function. It has always been found in teeth. Now, we never pay any attention to fluorin as a constituent of the diet. We usually, in such things, pay no attention until we must. We simply let it go until it is unavoidable. So it is in this case. We have learned also another interesting thing, that the thymus gland which is so interestingly connected with extension, has more fluorin in it physiologically than any other part of the body. Note the possibilities. I made a suggestion two years ago from that finding, and we are getting data that seems to show conclusively that thymus mobilizes fluorin, a sort of central station from which it is distributed in the quantity and in the condition in which it ought to arrive where it will be used. Just as thyroid mobilizes iodine, it looks as if thymus does that with fluorin, and now it may happen that diet deficient in fluorin might account for the poor enamel formation when enamel is being produced. It would not account for poor enamel structure after the enamel has been made.

Now, gentlemen, I have exhausted your patience, and I have gone away beyond what I am sure is reasonable, but as I am a convert to dental research from another field, I have not lost my love for my first love either. In going into this new field I had gotten into it long before I fully realized its vast, wide-open possibilities for the most active, earnest and effective usefulness, and the whole field in its opportunities and possibilities has appealed to me so much that my enthusiastic interest in the matter usually gets the better of my judg-

ment. I am very apt, when I get the opportunity, to speak in this rambling way all over the lot, anxious to bring out suggestive things, to cut out the technical detail and to try to make it something that can be remembered in its main points, which it is the function of the lecturer to present. I might have given you photographs of bacteria, showing them with their many Latin names, but I have tried to show you I don't know anything about dentistry, but I am trying hard to learn as much as possible. (Applause.)

I don't take this applause to mean an encore, but it reminds me of something which I agreed to say, and that is something that bears on the observation with regard to root canal filling, so please understand this and know that I am starting all over again. As to root canal filling, I don't know anything about what may be said to be the best method of doing it. I don't know whether it is desirable to permit a tooth that has lost its pulp to stay in the mouth or most desirable to remove it, but I have seen this one thing in New York, naming no dentist, and assuring you it makes no difference to me what the facts are, but anxious to know what they are. Let me visualize in the terms of one who was present that every particular remark I make is absolutely accurate in detail. I have seen an ex-Ray photograph from a given particular case in the hands of the dentist whom many of you know and who, I would say, is absolutely reliable and could have no occasion to fool himself or anybody. The pictures, one after another in series, running through a period of about six to nine months, the first showing the condition of the ordinary blind abscess, very profuse, very wide extension. I should say a big bulging abscess at the root of the tooth. The picture I saw next presented the tooth with the gutta percha filling, after all ionization and sodium or potassium treatment, pushed in as far as it would go beyond the opening, then packed tight with chlora percha, and I believe put in in every way to get it in solidly, to make it tight, filled with gutta percha, and apparently all ready for inspection as to whether it was there or not. The picture showing the gutta percha tip away down it seemed to me, and to us and those who looked at it, to be at the very bottom almost of the abscessed cavity from which the material had been taken, or at least had been made soft enough or was soft enough from whatever happened to permit the point to go down to the lower rim of this rarification. The point happened to be sharp, there was no bulging around the opening of any kind, but it happened to go right through beautifully, in fact it couldn't

have been drawn to order any better than it seemed to be. The next picture, about two months afterwards, showed that while everything at the top was the same, the gutta percha tip had turned, the lower border of the rarification was higher, suggesting regeneration and pushing up. Later the picture in the series showed the regeneration had plainly gone much higher and the gutta percha tip was again slanted over; and the last picture I saw showed very plainly that the gutta percha had been turned almost at right angles, the gutta percha tip had been completely surrounded by what seemed to be regeneration tissue. When I told this in private conversation during dinner, it was suggested that this direct observation of the fact, whatever it would mean, might be of interest to you. I don't pretend to interpret it, except the picture looked to me as though there had been regeneration and turning up of the gutta percha point as the regeneration advanced. Whether that tooth was any better in that person's mouth or not, you naturally would determine; I can't.

After considerable discussion and Dr. Gies' reply, Captain Thompson moved, seconded by Dr. F. E. Clarkson, that a hearty vote of thanks be tendered to Dr. Gies for his presence and for the very interesting lecture which he had given, which, on a vote having been taken, was carried with applause.

TRAUMATISM DUE TO CO-ORDINATION OF BRIDGE-WORK

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There is an ancient adage which bade the cobbler stick to his last. This axiom is founded on common sense. It might likewise appear that a specialist in any particular branch should refrain from criticism of other branches of his subject; that he should adhere to his own line, leaving to others who have practical knowledge and experience any expression of disapprobation. But while the cobbler may not be a tanner, he must be able to recognize and procure good leather in order to successfully ply his own trade.

In these days of many specialties it is difficult to draw a positive line of demarcation, so constantly do our subjects overlap and so close is their interdependence. The periodontist, beginning a case, must accept or reject much that is the work of specialists in other branches, and it is the shortcomings of the results in bridge-work restoration which most frequently he finds deplorable.

A realization of the growing importance of the subject of the reciprocal relations of the jaws, the occlusion of the teeth as it applies to every dental prophylactic measure, and to articulation of bridge-work in particular, is my justification for this paper.

It is quite the universal custom among those who make bridge-work to ignore the practical application of accurate measurements of the jaws which are so necessary to successful results in all restorations for the teeth.

The theoretical principle of substituting for lost natural teeth certain artificial appliances by attaching them to healthy abutment roots is undoubtedly sound. It is the ultimate idea, in my opinion, for the restoration of dental function. That cases so treated are followed by disaster, that they are productive of disease, and even death, does not prove that the idea is fundamentally incorrect.

In every form of scientific discussion differences arise as to that which is correct, and that which is not. The tests of time and usage will in the end show favor to one idea or principle to the exclusion of all others. This is as it should be, for it is by our allegiance to that which has proven good in

both theory and practice that scientific advancement is made possible.

The practice of crown and bridge-work is at present undergoing a very commendable revolutionary state in its development. New systems and technique have been introduced by various men who have recognized the necessity for greater cleanliness in mouths where bridges were a necessity. Certain forms of removable bridge-work appear to have solved the problem of sanitation. Conservation of normal pulp, and the construction of supplied dummies which represent true anatomical tooth form upon all their surfaces, is yet another most commendable advance. Nevertheless the utterly inefficient and worthless type of fixed bridge represented by a row of flat porcelain facings suspended between two-piece shell or Richmond crowns, is still a familiar sight. This type of bridge, with its grotesque occlusal surfaces has always been a menace to hygiene, and the only excuse those who still produce such bridges can offer, is that they were taught the method in their college days twenty years ago.

The periodontist cannot with propriety criticize adversely any of the several types of bridges or crowns which are approved by the authorities on this subject, nor the methods of procedure which enter into their construction. It is not the intention of this paper to open discussion on any other phase of bridge or crown restoration than that which deals with co-ordinating relation of the jaws in the function of mastication, trauma of the pericementum, and its pathological sequelae.

There are certain fundamental essentials in bridge-work which apply equally to all operations for the restoration of lost occlusal surfaces of the teeth, whether by bridges, crown, inlays, filling of plates, viz., that the occlusal surfaces which are supplied must co-ordinate with the antagonizing surfaces in the opposite jaw. Nature has produced for us the plans we are to follow in the restoration which we make for the teeth, and she protests against such work as does not prove up to her requirements, by instituting certain pathological processes in the supporting structures.

That there are physiological movements of the teeth in the avoli during normal function is not denied, the investing structures are singularly elastic, and attachment by ankylosis in primates would be fatal. That there is a movement of the teeth during the function of mastication, accompanied by malacia, is also here affirmed. This normal movement is

physiological, always slight, does not increase, and is necessary to prevent fracture when marked stress is applied in occlusion; while the latter is pathological, and is frequently accompanied by evident rarefaction of the investing structures, as the change of the approximal relation is extremely slight, even when considerable force is applied. The pathological occlusal relation is due to co-ordination of the occlusal surfaces. It is an acquired condition, and, among other causes, is the one I wish to bring to your attention to-night. It may be acquired at the time of the inserting of bridge-work and inlays and it is always as fatal in one case as the other unless the proper relief is obtained.

The prosthodontist finds that any violation of the laws of dental articulation which has to do with co-ordination in function, is fatal to the practical success of every plate which he makes. Certain difficulties were encountered in the olden days, prior to the introduction of anatomical articulation, chief among them the embarrassing knowledge that a plate would adhere to the mucous membrane surfaces upon which it was intended to rest only so long as the mandible was passive, just as soon as the function of mastication was attempted the plate would become confused with any food bolus, and these resulted in a mastication *of teeth*, instead of *by teeth*, as was intended. Many of these dentures which in their adaptation to the mucous surfaces were very tight as to fit, showed a perverse instability when put into service.

The bridge-work encounters no such unsteadiness after cementing a bridge to place. The bridge is set securely upon two or more abutment teeth or roots which are presumed to be in normal health. Dynamic stress, even at this time, is discernible. It is not to be expected that a bridge will gyrate as will a plate which has no abutments to hold it in the mouth—not for a while at least, not until these abutment roots have been literally broken from the alveolar process through exactly the same incorrect mechanical stress relation as in the case of the plate.

The exodontist really believes that a vast majority of teeth are diseased, and should be extracted, for it is his experience that most cases which are referred to him actually do need such treatment; while the periodontist seldom sees a case of dental periclasia having bridge-work but that it is found necessary to remove (and thus destroy) the bridge in order to proceed with the treatment. Many a handsome and exquisitely made bridge

has brought a smile of virtuous pride and satisfaction to both the operator and the patient when it was cemented into place, but there were no laughs and congratulations passed around when the abutments of the thing have been finally destroyed through septic periclasia, and it falls into the hands of the periodontist for removal.

The specialty of bridge-work seems to be noticeably unorganized, and the methods of practice quite experimental. Other branches in dentistry, which require special talent and training, both in the academic and technical aspects, such, for instance, as orthodontia, radiodontia (Roentgenology), periodontia, etc., have their own organizations, which are devoted to the advancement of their several branches; they have journals and published proceedings of their meetings which are national in their scope, and which exert quite a wide beneficial influence toward a unification of ideas and a standardization of technique.

There are nearly a dozen men of my acquaintance who make bridge-work restoration the major branch in practice, yet their individual ideas as to what should be accepted as standard, and what should not, would represent almost as many separate ideas as they have faces. There may be many, I hope there are, who construct all bridges and crowns upon the anatomical articulator, and who go to the same scientific measures to produce co-ordination in the oclusal relations of bridges, as do those prosthodontists who construct full dentures upon the principle which Gysi has exemplified to dentistry. I repeat, there may be many, but if so the fact has never been brought to my notice. In the case of bridge-workers it would appear that the necessity for proper use of the anatomical articulator seems to be less important to them in an inverse ratio as it appears to the periodontist.

The scientific procedure of anatomical articulation is a standard method of determining just what the true relation of the teeth should be for each case. One who expects to accomplish satisfactory results in bridge-work should discard the antiquated "rule of thumb" in articulation, and apply these scientific principles. He should adopt the anatomical articulator with its possibilities for accurate measurements in ascertaining the true relation of the condyle path to the plane of occlusion. He should apply the face bow, which will determine just where the model upon which he expects to build a bridge, where co-ordination of the oclusal surfaces of the

teeth in mastication has not been fully proved to be accurately normal.

The prosthodontist who does not employ this method in the construction of a plate, runs a very high percentage of failure. To be sure, steps necessary for the construction of a plate upon these principles increase somewhat the expense of production, but the constant necessity of remaking these cases which have resulted in failure becomes almost *nil*.

Dent periclasia has its most frequent and immediate contributing factor in trauma of the pericementum—trauma which is communicated to the investing tissues by an improper relation of the teeth in occlusion. These vascular investing tissues depend upon cell regeneration—a never ending metabolism—for their existence. When trauma is induced the food supply in these structures is inhibited, malnutrition and unbalanced waste removal follow, vital resistance is lowered, and any break in the integument at the subgingival space is quickly followed by infection.

Normal tissue never becomes infected. There must first occur certain changes which make the tissue pathologically receptive as well as some break in the integument where the infecting organisms may enter. This is true in regard to the infection of tissue which supports the teeth, as elsewhere in the body. In traumatic occlusion the elastic gingival attachment of the dental ligament becomes gradually weakened, and finally literally torn from the cervical cementum, opening the sub-gingival space for the ready entrance of extraneous material. In such an environment, the mouth flora find an ideal culture media and a ready passage. Normal gingival epithelium has a very high resistance to all micro-organic life, as have all the mucous surfaces of the whole alimentary tract, but when these structures have sustained a prolonged irritation, a constant and determined pounding whenever the jaws come to the closed position, they become exhausted, the natural resistive forces are found too debilitated and disorganized to repel attack. The symptoms of occlusal trauma are to be observed in mouths, perhaps years before the resistance of the investing structures have become so lowered that they become a prey to infection.

The mouth may at times be utterly neglected in so far as its sanitation is concerned: it may even tolerate the presence of badly fitting crown bands with their usual accumulation of septic debris, such a state being endured for years without evi-

dence of periclasia, but let a beautifully carved occlusal inlay or filling be inserted, where zeal for the artistic has resulted in an abnormal cusp relation, or let a piece of bridge-work or a single crown be placed in such a mouth, and the reciprocal relation of the occlusion violated, forces are immediately set up which result in tissue dystrophy and infection. This would indicate that the immunity of these tissues was sufficient in the one case, where the resistance was high, due to the normality of the occlusal relation, and insufficient in the other, where the abnormal stress relation, with its accompanying interference with co-ordination, had reduced the tissue resistance by traumatic occlusion.

Periodontists find bridge-work of every conceivable type in the mouths of their patients. A description of some of this should be suppressed—considered as unmentionable in polite dental circles—we will therefore let it pass. A reasonable percentage of this work, however, reveals at a glance that it is the work of the earnest, skilful and painstaking type of practitioner, who comprises the large majority of our profession. Let me present a typical case, overlooking for the moment the well nigh fatally diseased condition of the stumps which are acting as the holding abutments; let us observe the bridge itself. One can well imagine the satisfaction of the dentist when the piece was received from the laboratory quite finished and mounted upon the little plaster of Paris cast representing the segment of the jaws, which was so generously included in the impression. One can see at a glance that the porcelain facings are not checked, nor has the solder which has been so skilfully flowed over the backings and the conventional occlusal swagings, any pits or blow-holes. The reinforcement by extra plate and solder makes the shell crowns rather difficult to remove. There is an evident honesty throughout its whole composition. The shade selections of the porcelain facings are excellent, and they have been ground to fit the contour with precision. The buccal resemblance to teeth is striking. This seems as far as we can go in commendation or complaint, for the occlusal surfaces are quite untooth-like in both outline and form. And the lingual surface—there is no lingual surface. From the lingual cusp to the bucco-cervical border, there is nothing—just a smooth incline plane to encourage the tongue in its efforts to dislodge food particles.

This surface has been called a self-cleansing surface, an example of misnomer of the most pronounced type. Study of

models of such a case would reveal that all the occlusal contact stress had been concentrated upon the bridge, for the abutments are loose and elongated, due to a thickening of the pericementum by occlusal trauma. They are also septic. It is to-day a professional crime to set a bridge such as I have described. Infection of the abutments must as inevitably follow in this case as in that of the tooth with a root canal which has been filled with absorbent cotton. This particular kind of result in bridge-work is the outcome of unquestioning allegiance to antiquated methods, together with a disregard and ignorance of the anatomical movements of the mandible.

The making of study models as a forecast of treatment in restorations is a common practice among many of the more advanced practitioners. These study models are typical orthodontic casts, which are occluded in their true relations. Prognosis for the necessary anatomical restorations may thus be studied at leisure, and the scheme definitely decided upon before treatment is begun.

The taking of impressions of finished cases for the purpose of making casts for criticism of one's own results, is a practice which is indulged in by a few—yet were this a customary practice, what an infinite improvement would soon result. Diagnosis for prophylaxis in such cases as these would reveal traumatic occlusion if present, and much harm could thus be prevented. Were the results of these failures of bridge-work through this fault apparent after a few days or weeks instead of after several years of unsatisfactory service; were the symptoms which are induced of a painful or inflammatory character shown from the first, this paper would never have been written, for, like the prosthodontist, the bridge-worker would have definite and immediate trouble on his hands, and the remedy would have been adopted simultaneously with its introduction into plate work.

The practice of employing laboratory assistants, or of sending cases to the public laboratories, is good, provided one obtains competent workmanship. It must be remembered that these so-called mechanical dentists can only supply technical help, they have no academic knowledge of the anatomical parts which are undergoing repair, nor do they even have an opportunity to observe in practical service the appliances upon which they work. That they frequently have skill in their work which exceeds that of the dentists who employ, is obvious. But so has the bricklayer superior technical skill to that of the architect, and so it should be. That the laboratory

man's results are ever a failure is largely the fault of those who employ them. It has been said of the alarm clock, that to be successful with its use, one must know more than the clock.

In investigating the relation of the dentist to the public laboratory, I have found that it is customary for the dentist to send to the laboratory impressions which include never more than the lateral half of the jaw; that the articulator used is of the hinge principle type, or what is known as the "back extension," in use in place of an articulator, the latter having but one movement, lifting apart as a cover lifts from a box.

It is necessary, in order to obtain results which are satisfactory, to have an entire impression of both jaws, and to have the cast poured in some material which has sufficient hardness on the occlusal edges to withstand attrition while the cast is being articulated. The antagonizing casts should never be made from a wax bite, but from a cast made from an impression, and the upper and lower casts then assembled upon the anatomical articulator with the aid of the face bow.

Bridge-work should resemble the natural teeth in so far as it is possible. Correct measurements of the crown diameters should depart from the true measurements but slightly, if at all. Lingual surfaces are of greater importance to the functions of mastication than the buccal and labial, and they should be reproduced with greater care. When there is a great loss of alveolar tissue in the bicuspid and molar region, lingual roots should be carved upon these surfaces to lighten the weight or thickness, never departing from the true anatomical forms which nature has adopted, and which are fundamentally the correct ones.

The anatomy of the temporo-mandibular joints vary in every individual, as do the shape of the ears upon the outside of the individual's head. Its development as to form is greatly influenced by the erupting arrangement of the natural teeth in their occlusal relations.

Cases of uni-lateral deformities in mal-occlusion exhibit marked differences in the curve of the condyle path in the articulation. Certain maxillary habits are formed in each case previous to the loss of the teeth, and in any successful restoration of these last teeth, these facts should be ascertained and taken into consideration. Normal arrangement of the teeth in bridge restoration will not be tolerated in certain cases of this type when the maxillary habit is greatly interfered with.

There are certain names to which credit for research in this work should be given, for it is by the labor of such men as Bon-

well, Snow, Gysi and Williams particularly, and many others that this science has developed. One does not claim that there has been suggested here anything original, nor admit that the anatomical articulator has not been used in those cases and found successful.

The name of Pessio is almost as familiar to the bridge-worker as is the work itself. Dr. Friedrich A Pessio has recently published a text book entitled "Crown and Bridge-Work." It is a complete working compendium for this field. If the plea which I have made here has not impressed you with the gravity of the situation, I can do no better than to quote from the writings of this master of the subject. He states:

"Another fundamental to crown and bridge-work success was brought to the fore when a few scientifically inclined earnest workers, in an effort to make more effective artificial dentures, began a careful study of the various movements of the mandible during mastication. The object of these efforts was to devise a contrivance to accurately reproduce these movements so as to enable the dental workman, when mounting artificial teeth, to secure a more normal occlusion. Heretofore, if the upper and the lower teeth articulated with each other when the mandible was at rest, the work was deemed satisfactory, notwithstanding that the dentures were ineffective in mastication, owing to the fact that all the teeth met only when the mandible was in the rest position. At other times but few teeth were in contact. The immediate result of these investigations was a better understanding of the mechanism of mastication and a higher appreciation of the importance of normal occlusion that has since reached all departments of our profession.

"By occlusion is understood a rubbing or grinding surface contact of all the masticating surfaces of the teeth during all the movements of the mandible, as is always the case with the natural teeth in their normal position. Articulation is a mere fitting together in one position only."

"This understanding of occlusion brought to the fore an imperfectly recognized cause of failure of any dental bridges. With the mouth closed, the teeth on these bridges fitted the opposing teeth accurately, but during mastication they touched at a few points only. Except for this fact these bridges might have given many years of excellent service, but owing to defective occlusion the force of mastication was concentrated upon a few teeth, which resulted in literally pounding the structure to pieces in a short time. In other cases the stress set up a destructive irritation in one or more of the supporting

abutments, which just as surely resulted in the bridge failing. We know now that it is impossible for one tooth to be unduly strained during mastication, or in any other movements of the mandible, if the occlusion of the denture has been properly adjusted, be it a plate, a crown, or a bridge."

This work of Passo's is of such importance in the literature of bridge-work that I will also take the liberty of quoting from this same source from his chapter headed "Articulation." He states: "In crown and bridge-work the question of the occlusion is of most vital importance, as the stability and life of the work depend to a very great extent upon its proper occlusion with the opposing teeth."

"In all cases of bridge-work, it is absolutely essential that only first-class anatomical articulators, capable of reproducing the natural lateral or triturating movements of the mandible, so necessary for perfect mastication, should be used. Nearly all of the small so-called crown articulators on the market are absolutely worthless so far as securing good results are concerned. With these articulators the only movements possible are simply up and down, or the opening and closing of the mandible.

"In the majority of cases the face-bow should be used to serve as a guide to mount models properly on the articulator."

The time has arrived when our profession is being looked upon as a group of scientifically-trained men who have as their fundamental idea the prevention and cure of all disease which has its inception within the confines of the mouth. To be accredited with less would be abhorrent to every ethical practitioner. To be *producers of disease* instead of physicians; to be *destroyers of teeth* instead of dentists, to be *artisans instead of surgeons*, is the very antithesis of our aspiration. So if there has been a scandalously high rate of failure in our bridge-work, let us get together and see that this stain on the escutcheon of the best profession in the world is wiped out. Let all among us who have at heart the high ideals of our profession—either correct the practice of using a hinge articulator, or quit making bridge-work.—(*Journal of Allied Sciences*)

DISCUSSION OF DR. STILLMAN'S PAPER.

By GEORGE W. GRIEVE, D.D.S.

Mr. President: The members of the Executive are to be congratulated upon the fact that they have at last discovered Dr. Stillman, for he has given us in his paper the fundamental principles underlying good bridgework, and I desire person-

ally to offer Dr. Stillman my thanks for presenting the subject in the form in which he has given it to us this evening. I feel that I must explain my last sentence. Many of those present say to themselves, "What has bridgework got to do with orthodontia?" To answer this question I would say that Angle has defined occlusion as "the basis of the science of orthodontia." The essayist has practically told us that occlusion is the basis of the science of bridgework, and we must all realize that in the restoration of lost tooth tissue, in whatever form, be it bridgework, crowns, inlays, dentures, etc., our success will be in proportion to our knowledge of and skill in restoring the teeth and dental arches to their normal forms and co-ordination.

Some years ago a good friend of this Society—a Canadian born—Dr. J. Lowe Young, of New York, started a crusade in the interests of normal reproductions of tooth forms in the construction of cast gold inlays. His first paper upon this subject was read before this Society. He has since presented the subject before many societies in America, and his efforts along this line have attracted very wide attention.

Later, Dr. Pond, of Rutland, Vermont, showed how natural tooth forms can be restored with amalgam. He also appeared before this Society.

Dr. Arthur Black, of Chicago, also read a paper before this Society along similar lines, presenting the subject somewhat in the same light as the essayist this evening, but calling attention more particularly to the ill effects resulting from faulty restorations at or near the gingival borders.

In restoring occlusal surfaces I am quite firmly convinced that there is only one correct way, and that is by carving in porcelain, or in wax for cast inlays, according to the material with which the operator desires to make the restoration, taking into consideration always the excursions of the mandible. The simple hinge form of articulator and the stereotyped die plate were probably the best we knew or had at one time, but the man who would be up in line to-day must realize that these contraptions were the inventions of the Devil, the Kaiser or some of their subordinates, and would, I am sure, be loath to admit that he uses them now, but that he keeps them around the office to show to his friends and patients as appliances used in dentistry during the "dark ages."

The essayist desires to call attention to the importance of reproduction, as nearly as possible, of normal function, so that inflammation shall not be set up as a result of traumatism.

Many here are conversant with the technic, and those who are not will find recent literature full of it. I venture to say that if there was no malocclusion, and no faulty dentistry, there would not be much of a field for the periodontist.

As noted by the essayist, the advance which has taken place in periodontia, orthodontia and radiodontia, is due largely to the existence of many specialists and as a result of societies in these branches, where meetings are held at close intervals and the whole time devoted to the discussion of the work of one specialty and the subjects closely allied with it.

The suggestion of the essayist re the making of accurate study models as practised by orthodontists is good.

Dr. Stillman emphasizes the importance of making accurate measurements of the crowns of the teeth, so that the reproductions are as nearly as possible normal in every way. This is very important. Approximo-occlusal cavities are often filled without due consideration as to the normal tooth form, and where teeth have settled together as a result of approximal decay or the whole tooth crown is lost, the full mesio-distal and bucco-lingual diameter should be restored, and when this is done a crowding which may exist in the opposite arch as a result of the loss of tissue will be relieved, at least, if not corrected.

The form of the tempero-mandibular articulation is, no doubt, influenced, as suggested by the essayist, by the occlusal relations of the teeth, and this impresses us with the fact that the general practitioner should early note lack of development, or maldevelopment from various causes, in the mouths of his young patients and thus prevent the formation of a faulty tempero-mandibular articulation. The average case of malocclusion should not be sent to the orthodontist when all the permanent teeth have erupted (the old-time advice), but possibly before any of these teeth have appeared. The orthodontist is placed in a very uncomfortable position, to say the least, when a child who has been in the hands of a general dentist all its life is referred to an orthodontist for the correction of a bad malocclusion when it has reached twelve years of age. Developing malocclusion is evident often at four years of age, and then, not later in life, is the time to start corrective procedure.

There is a somewhat common practice in bridge construction which is sure to lead to traumatism that the essayist has not touched upon in his paper, viz.: the use as abutments of teeth the roots of which do not stand at the normal angle of

inclination. Placing the strain of mastication upon these leaning towers is a sure means of finding trouble.

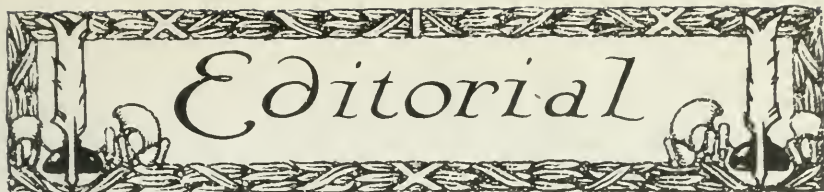
Some practitioners in dentistry feel that many of their patients are unable to pay a fee commensurate with the careful technic necessary to do this ideal work, and often without putting forth any decided effort to educate them to appreciate that which is better, they are content to jog along "in the rut." These men do not derive the greatest pleasure from their work, neither do they attain the position where their income is commensurate with expert service as professional men. The most paintaking dentists are usually, after a number of years in practice, found with large and lucrative practices among people who are very appreciative of their efforts. It is all a matter of education, first of yourself, and afterward of your patients.

NATIONAL DENTAL ASSOCIATION

SPECIAL ANNOUNCEMENT OF HOTELS AND GARAGES.

The National Dental Association will hold its Twenty-second Annual Meeting in Chicago, August 5-9, 1918. The headquarters will be at the Auditorium and Congress Hotels situated on Michigan Avenue, corner of Congress street. All meetings, clinics and exhibits will be held in these two hotels, which are connected with an underground tunnel.

The important announcement at this time must be the warning "*Reserve your rooms at once. Make reservations by mail direct to the hotel of your choice. Arrangements for parking cars should be made direct to the garage.*"



Editorial

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TORONTO, MAY 15, 1918.

No. 5.

TO WHAT EXTENT DO DENTISTS MAKE USE OF ASSISTANTS AND DENTAL LABORATORIES?

The faculty council of the Royal College of Dental Surgeons at a recent meeting discussed the advisability of making the teaching of the dental student more nearly conform to the general trend of dental practice as regards the use of assistants and laboratory help. To have some basis to go on, sixty dentists, chosen alphabetically, were asked: 1. If they employed an assistant? 2. If they employed a prosthetic laboratory man? 3. If they send work out to the public laboratories? The responses elicited the following information: A few (less than forty out of sixty) employed a lady assistant, seven employed a laboratory man, and forty-nine sent more or less laboratory work out. It would thus seem that practically every dentist has some form of help with laboratory work, while a good number do not employ women as office assistants. Quite a number of the office assistants do more or less laboratory work.

The impression among a number of dentists as to the percentage employing women assistants was all the way from 50 to 95, while similar opinions in regard to laboratory help

were away below the mark. There was no data gathered from those practising in the smaller cities and towns. The same opinions are that fewer assistants are employed than in the larger centres, but almost as much laboratory help.

From the above information there can be no doubt about the tendency to use both office and laboratory assistants. It was most unusual fifteen or twenty years ago to employ women in any capacity about a dental office. Men were then more frequently used as assistants if such were thought to be necessary. If women were employed at all it was to sit in the waiting room and do fancy work. Few men are now used as office assistants, though some are employed in the laboratory.

Dental education and practice are changing rapidly. A few years ago there was little prosthetic work to do in many dental practices. Since the discovery of the bad effects of infected roots of teeth, and the difficulty of treating pulpless teeth, more extracting is done, and hence more prosthetic restorations are required. It used to be that the dentist aimed to do all his prosthetic work, but now he finds that such work can be done by less expensive labor than his own. It is not necessary to spend four years at college to learn how to run through a vulcanite denture, solder a crown, or cast an inlay, but it does take all of this time and more to learn the underlying principles and the practice of dentistry. It is bad economy for a dentist, or anyone else for that matter, to do any work which can be done more cheaply by someone else. Dentists are rapidly finding out that their patients cannot afford to pay them at the rate of very high service while they polish a vulcanite denture, sweep the office, wash instruments, make appointments or answer the telephone. Such services require much less knowledge, education and training than making a root filling or deciding what operation should be performed. The dentist who wastes his time doing what women can do as well or better, is not serving his country to the best advantage during these strenuous times. To a layman it seems like poor economy to employ men in clerical and other light work—both in military and civil life—while young girls are being sent to the farms to do work where the full strength of a man is required. There is no clerical or light work about an office or laboratory that a woman cannot do just as well as a man.

Drs. Richardson and Price, Ottawa, are engaged to give their services in a public dental clinic at Ottawa.

THE CANADIAN DENTAL ASSOCIATION IN CHICAGO

This is surely a novelty. It is truly a jolt to our former notions of a national meeting. A Canadian national meeting held in a foreign country! Even the legislative body, the Dominion Dental Council, will hold its meeting in Chicago.

How did it happen? At the dental teachers' meeting in Pittsburg a group of members were talking about where the next meeting would be held. Dr. Hoff joined the group and said, "Where will the next meeting be?" Dean Webster said, in a joking way, "In Ann Arbor." Dr. Hoff thought the group was talking about the next meeting of the Canadian Dental Association, while as a matter of fact it was talking about the teachers' meeting. Dean Hipple, of Omaha, overheard what was said, and immediately consulted the secretary of the National Dental Association, who was near by, suggesting that the Canadians should be invited to meet with the National Dental Association as an indication of the close relations between two allied countries. As soon as the secretary returned to Chicago, he consulted Major Logan, the President of the National Dental Association, and the invitation came into the hands of the Canadian Dental Association in a few days.

The Canadians are to be the guests of the National Dental Association. Accommodation will be provided in which to hold its special meetings. The Canadians will have the honor of putting on one of the grand sessions and providing ten selected clinics. It is a great responsibility to provide this important session and the clinics.

The intention of the executive of the C.D.A. is to provide two essayists of world-wide distinction in war prosthesis. These men will present the results of their experience in now almost four years of war. It is hoped that they may have sufficient leave of absence to give some time to teach a little of this important work to the civil profession in Canada before they return. Steps have already been taken to secure leave for these men.

At the recent Ontario meeting the Society appointed a committee to assist in every way possible those who wished to avail themselves of the advantages of the greatest dental meeting ever held in America. Canadians who have not attended the National meeting of recent years have no conception of the magnitude of the affair; nor have they any idea

of the unlimited opportunity for advancement in every department of dentistry. Our judgment is that there will be more Canadian dentists in Chicago August 4th to 9th than ever attended a meeting of the Canadian Dental Association before.

Is it an indication of the times or an indication of the bigness of our confreres to the south of us to open their doors in such a magnanimous fashion? Dentistry is no longer national, even in its legislative aspects; it is world-wide in all its aims and aspirations. It is hoped that the President of the C.D.A. may succeed in having a representative of the greatest ally of them all, France, at the meeting. To this end he has approached our Government and that of France. France sent Dr. Carrel to the last National meeting, and Canada hopes to have the honor of presenting another great Frenchman at this meeting.

THE ONTARIO DENTAL SOCIETY

The Ontario Dental Society held its annual meeting in Toronto the last two days of April and the first two days of May. The attendance and interest was excellent, when the war and all its consequences are taken into consideration. As usual, Dr. Johnson was the chief attraction. His presence on any programme is a guarantee that something of unusual interest will be presented. We are glad his vigor of speech and clearness of thought in presenting a subject are even of a higher standard to-day than in the years gone by, when he made his reputation both in speaking and teaching. Dr. Smith, of Chicago, gave two very excellent lectures on anaesthesia. To practice dentistry without using local anaesthesia is to be known as one who is far behind the best. Dr. Vogt, of the Mellon Institute, Pittsburg, discussed the scientific side of silicates as filling, while Dean Webster took up the practical application.

The exhibits were not as numerous this year as formerly, owing to the difficulty of getting goods exported from the United States.

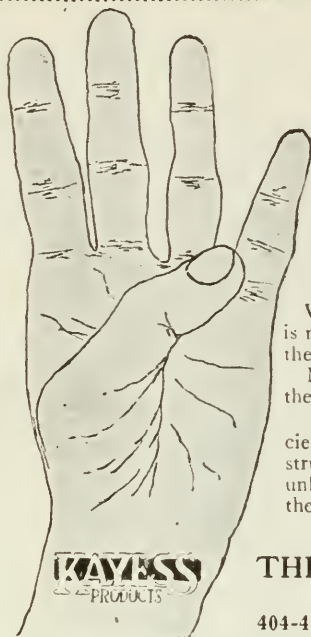
Having now run two conventions without clinics, we would suggest that the next meeting be one of clinics chiefly. A lecture on each of two evenings and all the daylight in clinics would be an attractive programme. In war time we must work evenings as well as daytime.

DENTISTS' ASSISTANTS

At a recent meeting of the Board of Directors of the Royal College of Dental Surgeons the Dean asked for a consideration of teaching dental assistants as part of the work of the School of Dentistry in Toronto. It seemed as if there were too many other things pressing for consideration to go into all the merits of the question. In this connection we suggest that a section of dental assistants be attached to the Ontario Dental Society at its next meeting. Such sections have been attached to some of the societies in the United States with great advantage to the assistants, the profession and the public.

AN APPRECIATION FROM ATLANTA

Dr. W. E. Cummer, of Toronto, next gave his remarkable lecture and exhibition of "Partial Dentures." He is an expert clinician, and although he stuck to his subject without a lost word during the time given him, he was not able to show all this great collection of appliances; they say he only brought five trunks full of them, and these are not nearly all he has. The perfection of his method is marvelous; in just a few minutes he would set up a partial denture, invest it and have it ready for soldering. To some of us who work days on this kind of job before getting it right, this was an eye-opener. The most original part of his work is the use of the indirect retainers, and if there is anyone who is not familiar with this work, he had better get busy and attend a meeting where Dr. Cummer is on the programme.—*The American Dentist*.



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Ontario Dental Society, 1918.*

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J. F. SIMPSON, D.D.S., L.D.S., Trenton, Ont.

Read before the Ontario Dental Society, April, 1918.

We are gathered from far and near in these most trying times that history has ever told of in the Christian era, to celebrate the fifty-first anniversary of this grand and noble society, that had its birth the same year as the Confederation of our grand Dominion of Canada, the finest domain of the grandest Empire in the world. The present war has demonstrated that the dentists form as important a part of the army as the surgeon or physician.

It is a very short time ago that the letters C.A.D.C. were first seen on the tunics of any body of soldiers, but now, every issue of any Canadian dental journal that you glance over you will see that one, or even more, of the men wearing C.A.D.C. on their tunics have been awarded some medal or mark of distinction for services done at the front in the army.

And we dentists are all proud to say that they are dentists by profession, and a great many of them members of this society. From a conference of Dr. Chapin A. Harris and a few associates was started the first dental college in the world, in Baltimore, in 1839. That was the first nucleus of dental education from a recognized centre; and now there are dental colleges in all parts of the civilized world. In those days dentistry scarcely took rank amongst the honorable trades. Now it is justly classed amongst the honorable professions. Before those days it was without authority, and very little literature. Now, seventy-nine years later, you all can contrast the status of dentistry of to-day with the status of dentistry of those days, and also the steps upward that dentistry has taken. So in our fair Dominion just such conferences took place by men practising dentistry who wanted dentistry

on a legal basis, and those conferences succeeded in getting provincial Acts regarding the practising of dentistry and dental surgery in the respective provinces.

It was through the efforts and influence of Dr. W. B. Day, of Kingston, there was passed in Ontario in 1849 the first Act respecting dentistry, and the last province to get dental legislation was Prince Edward Island, in 1891.

Then, as a sequence of these conferences after the first Act was passed, the dentists of Ontario got another Act, an Act of incorporation, passed in 1868. Then after that the Ontario dentists met in convention and adopted a resolution in 1875 requesting the board to establish a dental college in Toronto. The board requested the late Dr. J. B. Wilmott to undertake the organization of the college, associating with him Luke Teskey, M.D., M.R.C.S. The first session was opened in 1875 on a very small scale and poor equipment compared with the present college. Now dentistry is divided into orthodontia, exodontia, periodontia and radiodontia, etc.

Dr. N. Pearson, in his retiring president's address in 1891, threw out a suggestion to have the provincial laws of the several provinces of the Dominion so fixed that a graduate holding, say, D.D.S., as issued by the university, be so recognized as a standard, just as much as a B.A. or M.A., and entitle the holder to all of the privileges granted to holders of those certificates anywhere in the Dominion; and this suggestion of Dr. Pearson's of twenty-seven years ago practically came true last year, when, as most of these men here to-day remember, Dr. H. R. Abbott announced at last year's convention that the British Columbia Legislature had granted the requests of British Columbia dentists to incorporate in the new Dental Act authorization to accept certificates issued by the Dominion Dental Council; so that now the dental certificate issued by the Dominion Dental Council is Dominion-wide.

This reciprocity between the provinces, and the granting of a certificate that would be Dominion-wide, was the outcome of the Canadian Dental Association that held its first meeting in Montreal sixteen years ago, and was in existence for fifteen years, and held its meetings every two years before all the provinces came to recognize the certificate issued by the Dominion Dental Council.

Now, the writer would like to see after this present war is over, a movement—of course, through dental societies—to have a reciprocity of dental laws all over Great Britain and her Dominions—to have a Great Britain Dental Council, or

call it by what name they please, so that a dentist complying with its requirements could practice anywhere in Great Britain or her colonies.

That this is the age of associations, conventions, unions, etc., no one will deny. All professions—law, medicine, dentistry, theology, pedagogy—have their conventions; and in every department of thought and research; in fact, at whatever point men are focusing their energies and intellects, there you find an association of men of similar aspirations aiming at acquiring proficiency and knowledge.

That dentists are not permitting their profession to be outstripped by any other profession is evinced by their keenness and industry in research, and by the many dental societies in existence. The writer would like, if the Programme Committee could have the essays and all parts of this society printed in book form, as they did away back in the nineties, and sent to every member of the society, so that they could keep them for reference.

Now, *re* the museum: if every dentist would, when he comes across, either in operations or other ways, anything that he thinks would be of interest to the dental profession, let him send it to the museum, and the man appointed by the board will arrange and classify it, and in this way, by the combined help of the profession, the museum would soon grow to be very interesting and educative.

As the Programme Committee, to whom great praise and thanks are due for the splendid programme given to us at this society meeting, which makes it a post-graduate course. The writer thought that he would give his president's address in the form of a short history of the growth of dentistry in the Dominion of Canada.

I shall not further occupy your time. I thank you for the honor conferred upon me one year ago, when you elected me as your president. When first I became a member of this society, in the summer of 1890, when it was only a small society compared with the society of to-day, little did I ever dream of being its president; but my hope and desire always was that the society would prosper, and that it is, and always will be, a means of good to each and every member of the dental profession.

Gentlemen, I again thank you.

THE SCIENTIFIC SIDE OF SILICATES

C. C. VOGT, Ph.D., Mellon Institute, Pittsburg.

Read before the Ontario Dental Society, May 1st, 1918.

A Tribute to the Late Dr. Duncan.

Mr. President and Gentlemen of the Ontario Dental Society,—I feel I could not talk here at all in the city of Toronto without first paying a tribute to Robert Kennedy Duncan, who is a graduate originally of the University of Toronto in the chemistry department, and who, I believe, has made two of the biggest contributions to modern chemistry of any man I know anything about. Dr. Duncan, in the first place, due to a trip he took abroad, found out the way they were applying chemistry and allied sciences to industry, started in the United States the general principle of the application of science to industry around the university. That was one rather big thing, I think, but a thing that was much bigger which he did was the popularizing of chemical knowledge. It used to be that a man who knew a little about chemistry sort of thought it was a thing to conjure with, and he should use a lot of big words, and nobody would know anything about the subject he was talking about at all. But Dr. Duncan wrote two or three books upon the subject of the chemistry of commerce and chemical problems of to-day, and if you have read any of those books I think you will find chemistry is made so clear and popular to you that you will think you are reading a novel like his brother Norman used to write, rather than simply a treatise on chemistry, and I cannot help but express here in a public way the very deep sense of appreciation I have of having been able to associate with Dr. Duncan for the three or four years he was in Pittsburg before his death.

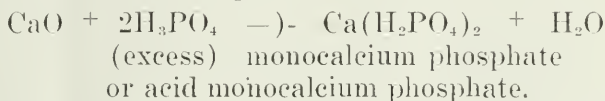
THE SCIENTIFIC SIDE OF SILICATES.

A thorough understanding of the chemistry of the oxy-phosphates is fundamental for a knowledge of the chemical and physical properties of the silicates. Therefore, let us consider briefly the zinc cements.

The powder is essentially the strongly ignited base zinc oxide which has been modified by the addition of various substances, such as magnesium oxide, bismuth oxide, silica, etc. These changes have brought about a considerable advance over the original zinc oxide powder. For example, bismuth increases the density and imperviousness, while magnesium has a noticeable effect upon the rate of setting.

The liquid is a more or less concentrated solution of phosphoric acid, to which have been added certain metallic oxides or hydro-oxides, such as those of calcium, strontium, zinc, aluminum and beryllium. These basic oxides fulfil a two-fold purpose:

1. The reduction of the acidity of the liquid since a part of the hydrogen—the acid constituent of any acid—is replaced by a metallic radical, thus forming acid phosphates of the metal in question and water. E.g.:



2. The regulation of the rate of setting. The presence of the dissolved acid phosphates retards setting.

The liquid, therefore, consists of a solution of the acid phosphates of the metals along with some free acid.

When the powder and liquid are mixed, the basic zinc oxide reacts with the acid liquid, producing zinc phosphate and water, just as milk of magnesia (magnesium hydroxide) corrects acid mouth by neutralizing the free acid with the formation of magnesium salts and water. This zinc phosphate combines with the water present in the liquid to form a crystalline hydrated zinc phosphate, just as the white anhydrous copper sulphate (CuSO_4) combines with water to form the well known blue vitriol crystals ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$). Possibly the zinc phosphate combines with both water and zinc oxide to form a hydrated basic or oxyphosphate of zinc, but, at any rate, the combination of water with some zinc phosphate to form a crystalline compound which acts as a binder for the uncombined particles of zinc oxide cannot be doubted. The role played by water is one of prime importance, and its action must be taken into account.

A microscopic examination of a hardened pellet shows the opaque particles of unacted upon zinc oxide held together by the transparent masses of microcrystalline hydrated zinc phosphate very plainly.

The silicates were developed in answer to the demand for a translucent tooth-like filling material which could be inserted while in a plastic state, and which would combine with ease of manipulation and attractive appearance a considerable degree of permanence. The oxyphosphate is too opaque and dead in appearance for æsthetic restorations, consequently the line of attack must be from some different angle. Were zinc oxide itself translucent, then the call for some other plastic

filling would never have arisen, since the building crystals in the oxyphosphate are transparent, its opacity being due to the presence of free zinc oxide. It seemed reasonable that if a translucent basic substance, which, because of its basic properties, would react with the acidic liquid, could be found the goal would be reached.

Naturally, the metallic oxides and hydro-oxides were first studied. For one reason or another they were all discarded as chief constituents, save calcium and aluminum. Of these two, calcium oxide (quick lime) is too caustic, and, in addition, is as opaque as zinc oxide, while aluminum oxide is too inactive to react with the liquid, and is also opaque. Aluminum oxide has desirable properties which would recommend it if only its unpleasant characteristics could be eliminated. Therefore, some combination of these two, or of these two along with other chemicals, must be sought.

The porcelain tooth suggested itself as a possible solution. Porcelain is made by fusing together silica, kaolin and feldspar—the two latter being complex aluminum silicates containing more or less potash, aluminum being next to silica in percentage. If it were possible to combine calcium with these constituents to form a porcelain-like melt, which, when ground, would react with the liquid, success would be assured. This *was* made possible by the production of a strongly basic melt, that is, one in which the proportion of basic oxides or their equivalents was higher than that of silica, an acidic oxide.

Various modifications have been adopted so that the constituents of the present-day silicate may include the oxides of calcium, aluminum, beryllium, strontium, sodium and potassium as basic factors, while the oxides of silicon, boron, phosphorus and titanium, along with fluorides and fluosilicates, furnish the acid characteristics. However, the essential plan of a strongly basic aluminum silicate as foundation remains the same. The chief object of the modifications has been to lower the melting point of the fusion mixture enough to increase the reactivity of aluminum oxide, which bears the same fundamental relation to the silicates that zinc oxide does to the oxyphosphates. In fact, the term “aluminophosphates” would be as descriptive as “silicates” for this class of filling materials.

The raw materials are sifted and mixed, then fused at a temperature of from 2,000 degrees to 2,500 degrees Fahr. to an homogeneous liquid, thus insuring density and uniformity. The melt, which resembles porcelain in appearance, is poured

from the crucible, the frit is broken up and ground in ball mills, and after sifting is ready for use.

The chemical composition of this powder offers a most attractive field for research, inasmuch as little is known of the constitution of an amorphous substance of this character. The identification of chemical individuals in a non-crystalline medium is extremely difficult, and requires tedious physico-chemical methods. Probably there may be found sodium and potassium aluminum silicates (feldspars) and calcium aluminum silicate, accompanied by phosphates, borates and fluosilicates, but the exact compounds are problematic.

The liquid differs from that of the oxyphosphates only in its being in general a less concentrated solution of acid phosphates and phosphoric acid. When the liquid is allowed to evaporate, crystals of acid phosphates separate out, proving the presence of these compounds. Show a sample of zinc acid phosphate crystallized out of solution.

The most important factor in the use of silicates lies in the mixing. When the powder and liquid are mixed the following reactions probably occur:

1. The phosphoric acid reacts with the powder, producing the acid phosphates of calcium and aluminum.

2. These acid phosphates and those already present in the liquid react with more powder, resulting in the normal phosphates of calcium and aluminum and water. During these reactions, some free silica acid separates out, due to the decomposition of the complex silicates by the acid.

The adhesive and cementing properties of the plastic material are due to the phosphates of calcium and aluminum; hence it is evident that the more complete the reaction between powder and liquid, resulting in a greater percentage of these salts, the better the filling produced.

A knowledge of some of the factors influencing the reaction between a solid and a liquid is most helpful in interpreting the phenomena accompanying such reactions. In the first place, the rate of any chemical reaction is dependent upon the number of molecules of the reacting substances which can come into intimate contact with each other. For example, when two salts in solution are mixed, the reaction is practically instantaneous, for the reason that the molecules of one salt come into the sphere of action of those of the other almost immediately. If, on the contrary, one of the salts is in the solid state the action takes place only on the surface of the solid which is exposed. Illustrate by experiment.

From these experiments it is clear that the surface exposed should be changed continuously by mixing in order to give the best possible chance for fresh molecules of the liquid to react with new surfaces of the solid, just as one hastens the solution of sugar in coffee by stirring, thus bringing fresh portions of water into contact with the sugar.

The state of division of the solid has a very great deal to do with its reactive power, since the speed of reaction is proportional to the surface exposed, and a fine powder has many, many times the surface of a coarser one. A restaurant supplies powdered sugar for sweetening grapefruit because the rate of solution depends upon the surface exposed. Illustrate by experiment.

In general, a rise in temperature increases the rate of any chemical reaction, therefore it is of advantage to carry out any given chemical change at as definite a temperature as possible. You are all familiar with the different time intervals necessary for the setting of silicates in summer and in winter, as well as for the setting on the slab at room temperature, and in the mouth at body temperature.

The change in concentration of the liquid changes the reaction to such a degree that it readily lends itself to experimental demonstration.

1. Normal mix.

2. Mix when water is added to the liquid.

This hastens the setting unduly, resulting in a pellet that is lacking both in translucency and in tenacity.

3. Mix when phosphoric acid is added to the liquid.

The plastic mass has desirable properties, but its setting is retarded beyond a practical limit.

The quantities of powder added to the liquid, the rate at which the powder is added, and the time of spatulation of each quantity of powder, each exerts its influence upon the final results; so these operations should be as nearly uniform as possible; *i.e.*, do not expect by rapidly adding large quantities of powder to the liquid the same results as those obtained from adding small quantities slowly.

Every chemical reaction is accompanied by a heat change. The neutralization of a definite quantity of phosphoric acid by a definite quantity of a basic oxide liberates a definite quantity of heat, called heat of neutralization.

Experiment to illustrate, using ZnO and H_3PO_4 .

If large quantities of powder are rapidly added to the liquid without thorough spatulation, a considerable heat is

evolved at one time, and this heat hastens the setting. On the contrary, if small portions are added slowly with thorough spatulation, this heat is liberated so slowly that it is absorbed by the air, and the mass remains plastic for a longer period, which contributes materially to the strength and endurance of the material after setting.

The cardinal points to be observed in carrying out the reaction between powder and liquid are:

1. Mix thoroughly. This is facilitated by the addition of small portions slowly with abundance of spatulation.

2. Keep conditions as uniform as possible. That is to say, avoid extremes in slab temperature, use care in preventing contamination of either powder or liquid, etc.

The reactions occurring during setting merit consideration as throwing some light upon the reasons for certain precautions taught by experience. The silicates undergo two distinct hardenings, the primary setting requiring from five to twenty minutes, while the secondary continues over a longer period of time—months, and even years, being necessary for the completion of the final stage. Fortunately, this latter process can be followed by the change in some of the physical properties. A critical study shows that the major part of the hardening is complete in twenty-four hours, so that for all practical purposes this time may be taken as that necessary for the reaction.

The primary hardening is analogous to that of the oxyphosphates, and consists in the combination of the metallic phosphates—to avoid complexity, let us say aluminum phosphate, which makes up by far the largest percentage—with water to form aluminum phosphate plus water of crystallization. This salt crystallizes out from a concentrated solution—which condition favors the formation of minute crystals of ultramicroscopic dimensions. Experiment to illustrate the change in size of crystals with change in concentration.

It so happens that certain salts containing water of crystallization lose a part or all of the water upon exposure to the air. Glauber's salt ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$), crystalline sodium sulphate, is an example of this. This phenomenon, called efflorescence, explains why it is that a silicate pellet loses its translucency and starts to crack on the outside when exposed to dry air. If it is kept under water, or is protected from the air, this does not occur, and inasmuch as it is intended for a moist environment this hydraulic property is not objectionable.

The slower secondary hardening is probably due to the same general causes as the setting of Portland cement, and consists of two phases:

1. The slow hydration of calcium aluminum silicate.
2. The drying out of colloidal silicic acid. This slow desiccation of the ultramicroscopic colloidal particles is accompanied by a hardening, just as glue or gelatin dry out to a hard, tenacious solid.

This theory of setting assigns physical or chemical reasons to several of the points learned by the use of silicates.

1. While in the plastic state the silicates are not hydraulic, and must be protected by rubber dam from excessive moisture. When one considers that in mixing and hardening the soluble acid phosphates are changed into insoluble hydrated phosphates, the cause of this precaution becomes obvious. Experiment illustrating.

2. The reason for a pellet's becoming opaque on exposure to the air has already been explained.

3. The fact that the final stage is slow should be kept in mind; therefore, the filling should merely be roughly finished, given some protection from moisture, and left until 24 hours have elapsed for final polishing. To be sure it is possible to finish a filling the same day as its insertion with what is apparently perfect success; nevertheless the restoration cannot be so good as if it had been left undisturbed before polishing. Subjecting the silicate to a strain of any kind whatever cannot but detract from its life by just that much. The best engineering practice with Portland cement is to allow the concrete work to remain undisturbed while it is undergoing change; so why should not the best dental practice be to allow a material, which is similar to Portland cement in the chemistry of its setting, to remain free from any strain while it is hardening?

It is not the intention of this paper to lead one to believe that the silicates are extremely delicate materials which must be handled with a degree of care which would be prohibitive, but rather to attempt to point out the reasons for a few simple precautions which will make this already useful substance even more efficient.

DISCUSSION.

DR. HUSBAND: I would like to ask Dr. Vogt if he could give us the chemistry of the dissolution of the silicate filling in the mouth, and under what conditions that would take place, whether it should take place at all, or whether it is a defect

in the mix, or what conditions of the fluids in the mouth bring about that dissolution, and what is the chemistry of it?

DR. VOGT: I am afraid I can't do that, because in the first place it may be almost like guessing on a horse race—there are so many different conditions in the mouth. I should say that there are probably two or three things which would tend to help the rapid dissolution of a filling. In the first place an extremely acid condition of the mouth is very likely to show considerable effect.

DR. HUSBAND: What would be that reaction?

DR. VOGT: That is pretty hard to say. It probably amounts to a slight decomposition of this complex silicate. This complex silicate is only loosely bound together. It is evident it must be, or very weak phosphoric acid could not tear it up like it does. I have an experiment or two going on that I had hoped to be able to bring before you a little more definitely on the setting of silicate. Unfortunately they didn't just turn out the way I wanted them to, but I thought I could by regulating the conditions make the crystals so large that where it set I could show them to you. Unfortunately that didn't quite work. You can get crystals any size you please by using a membrane. You take a glass like this and fill it up full with a salt-like silver nitrate, for instance, and then put a membrane like court plaster or any animal membrane across the top, and put this under a bichromate solution, and you will get crystals of silver chromate reaching from the top to the bottom of that, because the bichromate comes through very slowly, and it gives these crystals a chance to grow and grow as large as they please. That is what I had hoped to do. I took a little bottle and put some powder in it, and filled it with water, and then surrounded that with the cement liquid, and I was in hopes that the action would take place so that I could bring up nice big crystals and show you; but it didn't work. The reason of it was, I believe, that the complex silicate broke up so easily. The acids of the mouth will react the same with the complex silicate, producing a soluble salt, and that will leech out. But I do think a very great deal of it is due to the mixing. There is nothing which is absolutely insoluble, but the amount of insolubility may be like a limestone building that is not actually insoluble, but the amount of it is negligible for any practical purpose.

DR. WEBSTER: I think in the recent publication of Dr. Head he advised the setting of porcelain inlays with a silicate, because he says the silicate leaves a translucency to the porce-

lain filling, and that silicate is insoluble. You would qualify that statement, I presume?

DR. VOGT: I wouldn't want to say that there is anything which is absolutely insoluble now, but I do believe this is true that a silicate is less soluble than is oxy-phosphate. The reason of that is that it is a very well established chemical principle that with increasing molecular complexity; that is, the more complex a compound, the less soluble it is. If you could get a compound with 100,000 molecules in it the thing probably would never dissolve. Now, a silicate is very much more complex than is oxy-phosphate, and consequently I feel quite certain that the solubility of silicate is much less than that of oxy-phosphate. It is true that the index of refraction of silicate is about the same as that of the porcelain inlay, and of the tooth not quite, but relatively speaking, so that it does make a little more aesthetic restoration.

DR. WEBSTER: Another problem is the relation of the size of the granule of silicate or cement, and the relation of that size of granule to what is commonly called the adhesiveness of the cement.

DR. VOGT: I think, in the first place, there is not any question in my mind at all that at least over one per cent. of very fine particles is of very great advantage, because you get more of those particular salts present which are cementing in their property. That is, if you want to make a cement and you can get a thing under one set of conditions you can get 90 per cent. that is of cementing material, and under other conditions you can get 50 per cent. that is cementing material. For example, the certain one which has the 90 per cent. is stronger. I think that is perfectly evident. Now, on the other hand, there has undoubtedly to be brought into consideration the question of this cement having something to which it may hold. That is to say, in ordinary Portland cement in engineering practice it is true that you can make a stronger briquette with cement containing a certain proportion of sand or concrete than you can out of clean cement. The theory of that is that during the hardening this colloidal area around the cement particles has something to hold to when you have little chunks of sand or gravel. It gives a little more of something to hold to. On the other side of that same thing, however, is this point that I neglected to mention and should have, that when you react on this compound with liquid you never get a complete reaction between the compound and liquid. I believe that there is always enough unacted upon

powder to give something to which the thing may hold. I have not followed out with the size of particle of the material itself, the silicate itself, all the way through, the effect of leaving a few larger particles in. I did follow that out with putting foreign material in.

DR. WEBSTER: What I had in mind is, there are certain insoluble portions of the cement when mixing. Should these insoluble portions be ground up or the size of the granule be changed in the grinding or mixing, or should the mixing be made in such a way that the size of the granule should not be changed, and then the rapidity or slowness of the setting depend upon the size of the granule, that if the manufacturer has made this up with the idea that the primary setting will be completed in 15 or 20 minutes, what effect is it going to have if we grind it all up in a fine powder while mixing?

DR. VOGT: I don't believe with ordinary mixing, with ordinary spatulation, you can put enough pressure on these grains to grind them up very much. The thing may turn around the other way and you may grind down your spatula. Those particles are pretty hard; they have been subjected to a very considerable pressure. If you put the thing in a pebble mill and turn it around for three or four hours it has had a pretty good chance to reduce itself if it is agreeable to that kind of treatment; and I don't believe that with the ordinary spatula and ordinary slab under the usual conditions of mixing you will change the size of that granule much. Of course, there will be some chemical action on the granules, and those parts of the powder which go in first will be reduced to a very much smaller size than the ones which go in last.

DR. TROTTER: Is it ever possible to get rid of the free phosphoric acid?

DR. VOGT: I think there is always some free phosphoric acid present. I have had that in mind in the hope that some day I might possibly happen on something that would get rid of that free phosphoric acid. You never get absolutely free from it. If anybody tells you you do, just ask him to taste the pellet. That is one of the best tests for acids I know anything about. You can go away down to almost an infinitesimally small quantity of free acid by just a taste, and a man who has had the experience can tell the difference between one-tenth and one-hundredth, and so forth.

DR. TROTTER: The thoroughness with which you mix your powder will make a difference in the proportion of your free phosphoric acid?

DR. VOGT: It makes a very great difference; the more thoroughly it is mixed the less the acid.

DR. DRUMMOND: What quantity of time?

DR. VOGT: I should not want to make a flat statement about that, because different manufactures are quite different; what they turn out is quite different; but speaking for myself, I think between about two and a half to three minutes, with slow additions of powder and liquid, with good, thorough spatulation, is about the best for all concerned. I may be mistaken about that, but I don't believe I am.

DR. BAIRD: What is the effect of mixing water with the acid? It crumbles?

DR. VOGT: Yes.

DR. BAIRD: What about the temperature of the slab on which you mix?

DR. VOGT: I would recommend mixing on a slab slightly below the temperature of the air, but if you mix on a slab containing water, as in a bottle, you have to watch the question of humidity very closely, because if you go below the dew point you will condense the water on the slab, and you will simply make the thing set, but if you keep a watch on the humidity you can check that up and keep the water at such a temperature that it is just above the dew point, rather than just below.

DR. SHANTZ: Tell us how to watch the dew point.

DR. VOGT: Roughly speaking, when the temperature is about 90 degrees the average dew point is around about 75 in the summer.

DR. CLARK: Would that be affected by the degree of saturation of the atmosphere?

DR. VOGT: It certainly would. There are certain days in the summer when the dew point is pretty close to the actual temperature.

DR. FLEMING: I am very glad Dr. Webster brought up that point about spatulation of the silicate. Some years ago, when Asher's silicate was put on the market it was going to revolutionize all things; we were going to do away with all malleting of gold fillings, and Dr. Johnston was going to go out of business if the silicate people all had their way. Some people never have any mistakes—it is always the other fellow. I happened to be the other fellow, and would not get as good success with Asher's silicate as I had hoped to get, and was told I would get, and the demonstrator of Asher's silicate informed me I was grinding too much and spatulating too much, and breaking up the bond in it. I was to be very careful

about spatulating, so as not to crush the bond effect. I didn't crush the bond, but I didn't get as good success as I would like to have had. I have had experience with some of the other silicates since, sometimes good, sometimes bad, and sometimes indifferent, and I have had some of the demonstrators of some of these other silicates tell me I didn't spatulate enough. I want somebody to come along that strikes a kind of happy medium, and tell me I am mixing pretty nearly right. It looks reasonable to me if any substance is as hard as this stuff that has been ground up we are not going to grind it very much in spatulating, and almost any chemical compound is going to mix up to better advantage with lots of mixing.

DR. ROBERTSON: I would like to ask Dr. Vogt how far he would carry the use of the silicates. Would he try to restore the corner of an incisor, or how far would he care to go?

DR. VOGT: With respect to that I would very frankly say that personally I don't know, but I will also add that if I were a dentist and were going to restore an incisor, or very much of it. I would consider it as an experiment. I do think and know in some cases where the margin above was made good and wide so that there was plenty of chance to distribute that pressure over a considerable area I think there is a chance of the restoration staying, but I wouldn't want to say to you it would stay, not by any means. I myself have a porcelain inlay kept there by silicate for a couple of years, and I consider myself fortunate.

SOME ESSENTIALS NOT TAUGHT IN TEXT BOOKS

RICHARD L. SIMPSON, A.M., D.D.S., Richmond, Va.

Read before the Institute of Dental Teachers, January, 1918.

Operative dentistry is the foundation of our practice, therefore the course should be a broad one. No effort should be spared to make it as human as possible. No detail should be slighted, as success in operating depends upon a series of accomplishments. Publishers tell us that few dentists ever buy text books after leaving college, therefore our lectures are a great responsibility. Hobbies should not be ridden; at the same time honest convictions are like summer showers to growing crops.

Our teachers are earnest and conscientious, but we should not be satisfied with our product. What percentage of dentists do good work? Personally I do not believe twenty per cent. do. *One in five*. Your observations will convince you that this estimate is generous. This paper is no attack on schools, neither is it pessimistic. I have made it the rule of my life to honestly look at my own and our handiwork. This necessitates many changes, and many adjustments. Let us do what we can to increase the efficiency of our product and be of mutual help. We have made wonderful progress in the last twenty-five years, but what is the trouble with this distressing four out of five which has been mentioned? They left college with high ideals, certainly the great majority of them. Why did they fall by the wayside? We taught them how to do the work of dentistry as we knew it each year, but *we did not teach them how to defend themselves and how to grow*, hence the public in general receives poor dentistry, and dentistry in general is rated low socially, intellectually, financially.

The creative or constructive mind is sensitive to criticism. So also is the artistic. Since dentistry requires both talents you can readily see the troubles ahead of the beginner, and especially since the public is in rebellion at having dental work done at all. Explain this to the student as a fact, just as you explain how to make an inlay or remove a pulp. Explain it with a smile. For heaven's sake don't growl about it. Warn him that the public rebels at Removal of Caries—Proper Cavity Preparation—Rubber Dam—The Engine Itself—Time Consumed—Waiting for Appointments, etc. Explain that the public will want to rush him in almost every case, that most patients think themselves your only patient, and will plead for haste just this time. Tell him how tiresome all these things

become, how the actual work is not what gets on his nerves, but these things, the next patient waiting impatiently, the telephone and interruptions. Teach him self-control, patience, perseverance, and still again patience. Don't fail to tell him that our work in many instances requires doing things over and over again. He must fight to retain or cultivate the faculty of concentration. Constant complaints will tend to lower ideals, and a student should be made to feel down deep in his soul that poor work is dishonest, just as much so as highway robbery and forgery. Stolen money can be replaced by other equally as good, but lost teeth cannot equally be replaced. These things being so, your talents as teachers must be of the highest order to warn against these disagreeable facts without discouragement, and at the same time whet his desires to do a disagreeable but extremely important and interesting thing, and do it for the good of humanity; do it for his personal satisfaction. Teach him to work earnestly, seriously, proudly. It is as great as any work in the world, just as important, and requires the greatest versatility of talents. Teach him to play this game cheerfully and like a man. *Dentistry requires the best there is in the best man.*

We seriously weaken dentistry and lower the ability of each graduate every time we dismiss a graduating class uninstructed in regard to individual fees. Since operative dentistry is our foundation, its fees should be in proportion to those of crown and bridge work, exodontia, orthodontia, etc. The curse of operative dentistry is the public mind that revolves around the dollar amalgam filling. The public will appreciate and pay when it is instructed in proper cavity preparation, cement linings, contour, occlusion. The public must be instructed or there will be no good operative dentists for the public, since good dentists will be forced to specialize for the sake of the specialist's fee. The public gets what it pays for, and we must see that each student appreciates the importance of perfection in each detail, and so stiffen his backbone that he charges for it or his work will inevitably deteriorate. Most dentists are unfortunately afraid of their patients anyhow. The dental nightmare is the fear that patients will not return, hence the too low fee. The laborer is worthy of his hire. While all prices are soaring just now, you must advise him to increase too. Fees were established when only carious material was removed and the resultant hole filled with something. We have progressed to Black's Cavity Preparation, but fees have not. Formerly a patient would climb into the dental chair and

grin and endure the preparation of a cavity. Not so now. We have progressed all along this line, and then progressed from phenol and burrs by the gross to conductive anæsthesia, but fees have not progressed for the average dentist, and *no profession is better than its average man*. When the occasion arises the patient must be informed that there is as great difference in the quality of dental service as there is in shoes, automobiles and everything else. The two best materials for filling teeth are ability and character. *Increase in quality must have a corresponding increase in price, or you penalize excellence.*

Fear of the patient is the primary reason, and low fees are the secondary reason for leaving carious dentine in cavities, and bad cavity preparation in general. This is a subject you must handle with gloves off. No mollycoddle manners about this. Billy Sunday it.

This will give a splendid opportunity to distinguish between caries and decalcified dentine. The student should be shown as well as told. Right here let me advise you to keep both eyes on your infirmity demonstrators. Devote some time to the psychology of cavity preparation. The student really needs some very intimate help and encouragement here. A dentist hates above all things to be called rough. To a patient all pain is rough. Breaking down enamel requires force, and any force is rough. The more perfect the cavity preparation the more force and time required. Patients complain of time consumed, so you speed up, and slight force with speed is rough. As work increases in quality reputation increases in spite of growls about roughness. The other dentist does not like to hear of this good quality, so to his shame he replies, "Yes, but he is pretty rough, is he not?" So there you are. The student must be taught to explain to his patients these things, if necessary, to give them notice, not warning, of the approach of force, to show sympathy for them without being familiar or affectionate, and, above all, not to be jealous of the other man's reputation and good work. A knock at good work lowers the standard of our profession. He should go out of his way to compliment good work. He must make his patients take him seriously, and take his work seriously. While doing all this he can do the work so joyously that his patient will be interested and overlook what is of necessity to some extent rough. While impressing upon the patient the importance of removing all caries he should remove the least sensitive of it. Let him not knock his fellow-dentist who left

caries, but be content to impress the importance of its removal. This strenuous attack on the leaving of caries calls for a warning against a brutal removal of good tooth substance. Here is where your ability as a teacher comes in, to impress profoundly, but not let him go too far in the other direction. Another excuse for leaving caries is the sensational advertisements of the so-called white copper cements, with their wonderful (?) antiseptic properties. Unfortunately these advertisements destroy years of faithful teaching on careful cavity preparation, and consequently do a great deal of harm to the public. They are not copper cements anyhow, and in the lecture true copper cement should be shown to impress the student. Unless extra care is used to differentiate, the student's mind is overbalanced by the constant advertising. In every operation strive to attain the ideal. No one else has a better right to make a perfect piece of work. Perfection is never attained by putting a filling or inlay over the other fellow's work. The other fellow may have left caries. Caries cannot be detected by burrs, and the last layers should be removed by sharp excavators. Concerted effort should be used to induce manufacturers to make Black's spoons much thinner, so they will cut. It is distressing how many dentists do not know how and when to sharpen excavators. They should be sharpened for each case as needed. Not all at once, but as each one needs to be sharpened, sometimes two or three times in each cavity. This comes as a rude shock to students, hence the necessity for stressing it. The progress made in office equipment, radiography, anaesthesia and the so-called theoretical branches is splendid and necessary, but we must remember that all these are but means to an end, and this end is perfect dental technique.

The nightmare of dentistry is the fear that the patient will not return. This has been mentioned also as the primary reason for poor operating. It is no calamity to lose a patient. It is often a compliment. Better lose some patients rather than lose your peace of mind and self-respect, or lower your ideals. The other fellow loses them too. No one man can work for everybody, so some are certainly left for the other dentists. In this lecture show the fallacy of competition and urge co-operation. The other dentists are friends, not enemies. Tell him to call on the other dentists as soon as he locates and ask for their overflow. It is the strictly proper thing for the other dentists to call first, but it is this waiting for them to call that engenders the first ill-feeling. Dentists are not good callers,

and it is most emphatically best for the beginner to call first. He must not try to show off or appear wise. Let him appear humble.

There is something about the practice of dentistry that is unsatisfying, making you feel that your work and talents have been in vain. Two reasons bring this about; first, the public has a distinct dislike to dentistry, and seems to think it smart to cultivate it, whereas it surrounds all other true professions with a kind of halo; second, we teachers do not make these halos for our best dentists. We should speak of them with pride, and make our lectures living things, freely sprinkled with the names and methods of our living men who are contributing to our growth and excellence. Even our geniuses will tell you that it is a rare thing for other dentists to compliment them. How seldom do we hear an unqualified compliment from a dentist. Is it fair to damn with faint praise the redeeming one out of five?

On the walls of practitioners of other learned professions we see pictures of men who have made and are making those professions. Do you see pictures of dentists? The absence of pictures of instructors from the walls of dentists is a crying shame. Instructors is used in its broadest sense, and not confined to colleges. It indicates ingratitude, and ingratitude is the meanest sin in the calendar of sins. This is especially heinous, since no other profession requires more personal touch to impart it. For thirty years dentists have been so generous with their knowledge that others demand this knowledge as a divine right. Any knowledge that relieves human suffering should be freely given, but it should be received gratefully.

We must see to it that our coming practitioners appreciate dental worth and reverence it. We must see to it that they themselves deserve appreciation and reverence.

Allow me to suggest that your lectures can be more readily absorbed if you group your reasons, advantages, disadvantages, etc. Let me illustrate. There are seven chief reasons for using the rubber dam:

1. Perfect view of cavity.
2. Excludes moisture.
3. Excludes blood.
4. Less sensitive.
5. Keeps drugs and canal instruments out of throat.
6. Prevents infection.
7. Permits accurate adaptation of filling materials.

It means little to a student to see this in straight printing, or to hear it in ordinary conversation, but this numbering and grouping fixes it in his mind.

At the beginning of the session warn him against too early marriage. Four years at college and contact with the public gives him an education, and contact with the right kind of people gives him culture. At the end of three or four years of practice he can marry a much higher type of girl. Poor and uneducated girls are not the only pretty and lovable ones. Make him have a proper respect for himself, his education and his calling. *The greatest thing in the world is a fine young man with possibilities.* Fathers and mothers of fine college bred girls are praying for such a son-in-law. Why, then, love and marry beneath him? He must be reminded that he is growing, and will continue to grow, while the girl without education stands still after marriage. By all means warn him against affection for infirmity patients and the usual college neighborhood girls. It is pretty safe to marry among the successful professions. Daughters of physicians and ministers make admirable wives. At least marry a girl who has college training or its equivalent in culture, or he will marry beneath himself. He owes this to himself. He owes this to his profession. A wife with wealth makes it possible for the right sort of dentist to help his profession grow, because he can afford to give it more time.

Dentistry is really only about one hundred years old. For seventy years we devoted our energies to become the best dental mechanics in the world. We succeeded. For thirty years we have worked to be acknowledged as truly professional. The world admits our mechanical ability, and is about ready to acknowledge our professional standing; but we have neglected an equally important part of life, viz., good citizenship. We have had our hands so full of the two other parts; and it takes so long to do dental work, and its small remuneration per hour does not enable us to make much of a showing; and the sensitiveness of being hurters have all kept us from doing our duty to our city, state and country. This war has shown that there is present in our profession a splendid citizenship. This should be our next great task, and in mastering it we will automatically remedy most of the evils under which we now groan. Our intimate and prolonged contact with the public should make us broad-minded. We must be informed on general subjects, and by this means prevent people from talking shop to us when in social contact. We must

improve our condition until the best dentist in any city or community has as good financial standing as the best lawyer or physician.

The human race advances only by the extra achievement of the individual. It is this extra achievement I am trying to impress upon you to-day in order that you may impress it upon each student.

CHLORA-PERCHA DOES NOT RADIOGRAPH

W. CLYDE DAVIS, D.D.S., Lincoln, Nebr.

While doing some reasearch work, relative to root-canal fillings and focal oral infection, I was struck by the large number of root fillings I had personally placed which showed a healthy apical region with the root filling only one-half or two-thirds of the way to the apex, the remaining one-half or one-third showing as though there existed an entirely unfilled canal which appeared of easy access, yet small.

I therefore did the following experiment, which I would advise every radiographer to perform, to prove up my findings.

I prepared four small straight root canals, as found in lower centrals. I broached them with a small reamer until the broach would protrude slightly through the apical end. I flooded the canals with eucalyptol, then pumped into the canals chlora-percha as used by dentists generally for the past thirty years. This was pumped into the canal until it formed in a ball beyond the apex. A canal point was forced into the canal one-half the length of the canal, the canal point having been previously measured and cut to one-half the length of the root. The excess chlora-percha was then wiped off the end or root.

These roots were then lightly waxed to the face side of a film and exposed full time, at the usual distance. The result showed nothing in the apical half of the roots, while the canal point showed up clearly for the portion it occupied. The above is easily proven, in which case I would like to ask how much does the radiograph show us about the presence or absence of root fillings placed these thirty years?

I am at present using a radiodescent chlora-percha made by adding eight grains of bismuth sub-nitrate to each drachm of chloroform before dissolving in the gutta-percha.

Dentists and radiographers better try this experiment and stop to think a bit before they diagnose "no root filling" when the apical third seems open in the roentgenograph.

Dental Societies

PRESIDENT'S ADDRESS

MRS. A. E. WEBSTER, Toronto, Ont.

*Second Annual Meeting of the Women's Auxiliary to the
C.A.D.C., Toronto, June 4th, 1918.*

As your president for the past year I welcome you to our second annual meeting.

On this occasion we should take a general survey of our organization: (1) The reason for our existence; (2) the details of the work of our different committees during the year, and (3) a look towards the coming year with such suggestions as may aid in making us even more efficient than we have been thus far.

First, have we a laudable reason for our existence? Is the service we can render valuable, essential, worthy of a woman's effort?

Consider briefly the value of dental service in general and the recognition which it has received.

In civil life during the past fifty years dentistry has more and more become recognized as being essential to health, until in the past five years it has been broadly accepted by the public and the medical profession that the general health is largely dependent upon mouth conditions, and that many diseases and systemic disorders may be cured by proper dental attention.

The state recognizes this in appointing dentists in the public schools, hospitals, asylums, etc.

I might add here that Germany takes great care of the teeth of the little boys in schools, orphanages, etc., in order to make these boys more fit for military service, but strangely enough, no care of the teeth of the girls. Again, the army recognizes the value of this service in rendering men fit for military service, in relieving pain and preserving the general health of the men at the front, also in caring for the returned men.

Look for a moment at the work of the C.A.D.C., which, I feel assured, is the most efficient dental service in the Allied armies. Overseas alone over two million operations have been performed. Think of what that means in relieving pain, making men fit for the fighting front, and in maintaining general health. Then, on this side thousands, otherwise unfit, made into soldiers by the services of the C.A.D.C.

In realizing the great value of what the C.A.D.C. have done, and are doing, to win the war, we realize the value of our own work, which is to aid the efficiency of that corps.

The service we may render has both a sentimental and an intrinsic value. The man overseas, or about to go overseas, who knows there is a body of women standing back of him ready to give aid and womanly sympathy to his family in case of trouble, and to whom he may appeal for anything he may need, can give all his attention to his duties. Every letter, every parcel, every box, and every remembrance has a worth far beyond its commercial value. The encouragement from home in the form of remembrances and hearty good cheer is sometimes called the second line of trenches.

The complete failure of the Russian army was due to the failure of the home. The families of the men at the front were not able to send comforts and assurances of well-being at home which would have enabled the soldiers to carry on with courage and valor. In other words, what has been termed the second line trenches failed to back up, encourage and hearten their fighting men, who consequently disbanded.

Now, we form a so-called second line trench to our division of the C.A.D.C., and indirectly the whole Canadian army. Let us not fail to encourage and strengthen the hands of our men in every way within our power. Does each woman here realize that the cake she sent overseas cheered the heart of not one, but many men?

In these days of short rations the intrinsic value of our work must not be underestimated. The coats, the towels and the sanitary equipments, all help to make the work of the officers and men more efficient, and the men they serve more able to do their part.

In glancing at our work of the year, which will be placed before you in the detailed reports of our treasurer, secretary and various committees, I feel gratified at the sustained and steady effort that has been put forth. The unflagging energy of our Ways and Means Committee and the sub-committees working under its management, which has resulted in the raising of over one thousand dollars, is to be highly commended.

The able manner in which the Comforts, Packing and Purchasing Committees have sent boxes of comforts to the men overseas affords us great satisfaction. As also the loyal efforts

of our Extension Committee, our Investigating Committee, and our Relief and Visiting Committee.

Every effort of our Standing Committee has been nobly sustained by the main body of our membership.

Owing to the energy and good services of a special committee the Red Cross has supplied some equipment for the hospitals. This source of assistance should be further developed, because the dental profession and many of our members are among the most active in that organization. In this connection it must be borne in mind that the Red Cross is not expected to care for or give supplies to any branch of the combatant force. Their duty is to care for the sick and wounded only.

Looking forward, I may say that we will shortly be a fully incorporated and registered war charity, as the matter of securing a charter for our auxiliary is at present under way. We are but the Women's Auxiliary of C.A.D.C. Division No. 2, but I have a hope that women's auxiliaries similar to our own may spring up all over Canada, backing up the C.A.D.C. from every part of our beloved Dominion, and that we may be incorporated into a Dominion-wide organization. Already we have the Hamilton Auxiliary, which is most helpful in working along with us. I believe there is also a similar organization in Calgary; and not only in Canada, but in Cleveland, U.S.A., they have a Women's Aid to the Dental Corps of their Ohio State Dental Association, which was modelled upon ours. So you see we may look for not only a national, but an international scope for our work.

Having now completed a second year of work under our constitution, it might be well for the incoming executive to study its provisions carefully, with a view to adapting them more particularly to our needs. That part of the constitution relating to the election of officers is, I think, not well suited to so small an organization, and while I have no definite method to recommend, I feel that if the matter were taken up we could find a method of election which could be more simple for the Nominating Committee and more adapted to our auxiliary.

Another suggestion received through Mrs. Levett is, I think, worthy of our consideration, which is that we should get in touch with the families of the men in the Dental Corps and have them inform us of changes of address, so that we may keep a corrected list of addresses.

A further idea which I would submit for your consideration is that one or two of our monthly meetings of next year be held in the evening, when the men of the dental profession would be invited to attend, thus attracting their interest and support.

In retiring from the president's chair, I wish to thank the members of this organization for the honor of having been your president, and for the unfailing confidence and support which has been accorded me. Whatever success we have achieved, and whatever service we have been able to render, has been due to the untiring efforts of your executive. Especially do I feel grateful to the women who took charge of the various committees, because it was by their efforts so much was accomplished. The personal loyalty and support has been most gratifying and encouraging.

I also take this opportunity of thanking our first vice-president for her good counsels and assistance in presiding on several occasions.

I bespeak for the incoming officers your loyal support, and for the organization such a development that it will be to the dental service in the army what the Red Cross is to the medical service.

SECRETARY'S REPORT OF THE ONTARIO DENTAL SOCIETY CONVENTION HELD IN TORONTO APRIL 29, 30 AND MAY 1, 2, 1918

MONDAY, APRIL 29TH.

The Executive Committee met at the Y.M.C.A. on College street for luncheon, all members being present, together with Dr. Fuller, of London, and the president, Dr. Simpson, of Trenton.

It was moved and seconded by Drs. Webster and Ellis that the executive recommend to the society the appointment of a permanent honorary secretary-treasurer, with an honorarium. Carried unanimously.

Other phases of the convention, arrangement of programme, etc., were discussed, and plans suggested for next year. It was agreed that clinics should be the main thought for 1919, with but one outstanding paper.

In the Jenkins building, 30 Grenville street, the fifty-first meeting of the O.D.S. opened at 2.45, with the president in charge.

Dr. Simpson, of Trenton, our president, read the president's address; also reading a paper on "The Effect of Acids on the Teeth in Connection with Munition Workers."

3.15.—Dr. Johnson, of Chicago, gave a splendid talk on "Contact Point and Cavity Preparation," questions being asked by the following men in the order given: Drs. Devitt, H. Clark, G. McLean, Proudfoot, Coyne, Webster, Snell, Husband, Campbell, Thornton, Fleming, Overholt, Scott, Day, Shantz and Proudfoot.

At the close of the discussion, Dr. Willmott presented a motion, seconded by Dr. McLaughlin, "That the president appoint a committee to consider the reorganization of the management of the Society, and report next year." Carried.

The president appointed Drs. Willmott, Bothwell, Webster, and Thomas as the committee.

The secretary then read the resolution of the Executive Committee *re* appointment of the honorary secretary-treasurer, and moved its adoption. Dr. McKim seconded the motion. Motion carried unanimously.

The president appointed the following Nominating Committee: Drs. Webster (convenor), Flemming, Devitt, Kennedy, Joseph Stewart, Ross Thomas. Meeting adjourned.

TUESDAY, APRIL 30TH.

9.30.—Dr. Johnson addressed the convention on "The Preparation of Gold Inlays," embracing cavity preparation, making wax model, investing, heating mould and casting, karat of gold and finish, questions being asked by Drs. Shultz, Dawson, H. Clark, Dean Webster, R. J. McLaughlin, Trotter, Scott, Sparks, Spalding, Mallory, Willard, Watson and Brown.

10.45.—Dr. McLaughlin reported on work of Oral Hygiene Committee. Said report adopted.

The financial report of the Oral Hygiene Committee, given by Dr. Ellis, showed a deficit of \$90, and asked for a larger grant. Dr. Ellis moved that the grant for 1919 be \$250. Dr. Conboy spoke on organization work of the committee, and said \$250 was too small a grant. Dr. Shantz suggested that the matter of grant be left to the incoming executive. Flemming and Rhind moved and seconded a motion that the matter of a grant be left to the incoming Executive. The motion was carried unanimously.

Dean Webster read a letter from the New Brunswick Dental Society *re* scarcity of teeth, and prohibitive law *re* importation of teeth with platinum, suggesting that platinum scraps be sent to the dental supply houses here, and not sold.

Dr. Conboy announced the next meeting of the Canadian Dental Association was to be held in Chicago in connection with the National Dental Association, and that we were to be their guests: and made a motion, seconded by Dr. McLaughlin, that an excursion be arranged, so the Canadian dentists could attend this meeting in Chicago. Carried.

Tuesday p.m.—Dr. Johnson gave an interesting paper on “Business Management of a Dental Office.”

It was moved and seconded by Drs. Coyne and H. Clark that a vote of thanks be tendered to Dr. Johnson, to which Dr. Johnson replied very acceptably.

2.45 p.m.—Dean Webster introduced Dr. Vogt, of Pittsburg, who spoke on “The Scientific Sides of Silicate Cements.”

While Dr. Vogt was preparing the exhibit for his talk Dean Webster explained the duties of the taxing officers, as suggested to the dental profession.

In the discussion of Dr. Vogt's paper the following men took part: Drs. Husband, Trotter, Drummond, Baird, Shantz, Clark, Flemming and Robertson.

WEDNESDAY, MAY 1ST.

Dr. C. E. Smith, of Chicago, gave an address on “Conductive Anæsthesia.” This was followed by a talk on “Army Dentistry” in connection with work in the base hospital, by Capt. Barbour. Capt. Thomson spoke on Army dentistry as pertaining to returned soldiers.

12.30 p.m.—Luncheon was served at the Central Y.M.C.A., when Dr. McArthur, of New York, gave an interesting address on Russia.

2 p.m.—Dr. Smith showed lantern slides in connection with “Conductive Anæsthesia,” followed by a short discussion.

Dr. McLaughlin gave the report of the Committee on Malpractice, moving the adoption of the report, seconded by Dr. Willmott. Carried.

The report of the Nomination Committee was as follows:

President—Drs. Fuller, of London; Clark, of Hamilton; Rhind, of Toronto; Halliday, of Walkerton; E. Hart, of Brantford.

Vice-President—Presidents of all local committees.

Secretary—Dr. J. A. Bothwell, of Toronto.

Treasurer—Dr. Clarence Brooke, of Toronto.

Programme Committee—Drs. W. E. Willmott, I. H. Ante, C. A. Snell, H. A. McKim, Dalrymple.

Oral Hygiene Committee—Drs. H. E. Eaton, N. Coyne, F. C. Husband, A. W. Ellis, T. J. Conboy.

Malpractice—Drs. R. J. McLaughlin, F. J. Conboy, Wallace Seccombe, A. D. Mason, A. E. Webster.

The ballot cast for the election of president showed Dr. Rhind the successful candidate.

THURSDAY, MAY 2ND.

Dr. Simpson introduced the new president, Dr. Rhind, and also made a few complimentary remarks in introducing Dr. Webster, who gave a paper on "Silicate Cement."

11 a.m.—Dr. Green, of Ottawa, gave an interesting paper on "Experiences Overseas in the C.A.D.C."

Moved by Drs. Willmott and Webster that in the opinion of the O.D.S. it would be wise to consider bringing home from overseas Col. Hume and Dr. Villier to teach dental prosthesis. Carried.

It was moved and seconded that Drs. Webster, Conboy and Bradley be a committee to prepare a letter in connection with the above resolution, and present same in person to the Minister of Militia.

Dr. Conboy and Dr. Harwood moved and seconded that a vote of thanks be tendered to the Programme Committee for work done this year in connection with the O.D.S.

Convention adjourned.

NATIONAL DENTAL ASSOCIATION MEETING AUDITORIUM HOTEL, CHICAGO AUGUST 4 TO 9, 1918

The following is a list of hotels and rates:

AUDITORIUM HOTEL, MICHIGAN BOULEVARD AND CONGRESS STREET.

Single Room without bath, \$1.50 and \$2.00 per day.

Single Room with bath, \$2.50 to \$4.00 per day.

Double Room without bath, \$2.50 and \$3.00 per day.

Double Room with bath, \$4.00, \$5.00 and \$6.00 per day.

CONGRESS HOTEL AND ANNEX, MICHIGAN AVENUE AND CONGRESS STREET.

Room, detached bath (One Person), \$2.00, \$2.50, \$3.00 per day.

Room, private bath (One Person), \$3.00, \$3.50, \$4.00, \$5.00, \$6.00 per day.

Room, detached bath (Two Persons), \$3.00, \$4.00, \$5.00 per day.

Room, private bath (Two Persons), \$5.00, \$6.00, \$7.00 per day.

Suites: Two connecting rooms, private bath (Two Persons), \$6.00 to \$10.00 per day.

Three or four persons, \$8.00 to \$14.00 per day.

Corner Suites: Parlor bed room and private bath, \$10.00 to \$50.00 per day.

The following is a list of garages and rates:

Our rates for storage are \$1.00 for the first 24 hours, and 75 cents each additional 24 hours. At these rates cars can be taken out for driving and reparked during the same 24 hour period at same charge.

CITY AUTO PARKING COMPANY,

A. V. Jackson, Gen. Mgr.,

Michigan Ave. and Lake Street,

We are prepared to take care of thirty or forty cars during your convention, at a special rate of 75 cents per day, providing they notify us of their identity as a member of your Association.

DOWN TOWN GARAGE,

A. J. Bemmer, Mgr.,

Michigan Blvd. and Eighth St.

One thousand cars can be parked in Grant Park (on the Lake Front) free. The City of Chicago furnishes policemen to watch these cars.

J. P. BUCKLEY, Chairman,

Publicity Committee.

GENERAL CLINIC.

Arrangements are sufficiently advanced to promise the members of the Association that the General Clinic will be one of the great features of the 1918 meeting.

In conference with officers of the National Dental Association, the Committee in charge of the General Clinic carefully considered the nature of the clinic to be presented this year. After trying for the past few years new features in conducting the Clinic Program, it is the belief that a greater number will be served and benefited by holding a General Clinic grouped into Sections, namely: Operative, Prosthetic, Crown and Bridge Work, Orthodontia and Prophylaxis.

To make it National in character, the President of the different State Societies, was requested to appoint two Clinicians and two associates from his State Society.

Up to date, thirty-nine State Societies are represented, and the remaining nine will be represented before the publishing of the Official Program.

Far away Alaska is sending two and two associates, and to make the Clinic more than National, in fact an allied affair, the Canadian Dental Association has promised ten of the best Clinicians in the Dominion. In addition, there will be a few Unit Clinicians which will demonstrate principles that require more than two men.

It is safe to say that this Clinic will be unique in the sense that every man on the program will either be present or be represented by his associate.

DON M. GALLIE,
Chairman General Clinic.



The G.V. Black Memorial to be Unveiled at the National Convention, August, 1918.

RESULTS OF THE EXAMINATIONS, ROYAL COLLEGE OF DENTAL SURGEONS

The results of the recent senior examinations are as follows: Passed all the requirements and admitted to the degree of Licentiate of Dental Surgeons—Archibald W. Boyd, Abe Saul Fauman, Hugh Kenneth Henderson, Elford Victor Humphreys, Alex. McCuaig, Moore F. McRae, Theobald Regnier, Bernard Schaffer, Samuel W. Sproule, Edward Cecil Young, Guy Harry Jones, Frank C. Harwood, Joseph Omer Brisebois.

GRADUATES IN DENTISTRY, DALHOUSIE UNIVERSITY

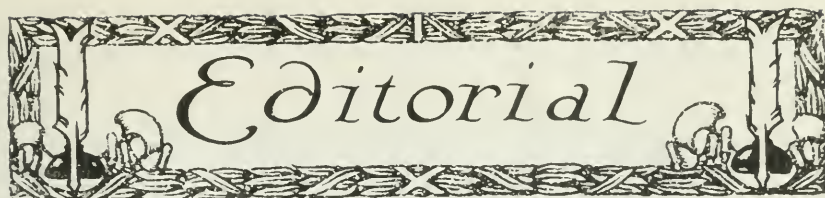
The convocation of the Faculty of Dentistry was held on May 30th. The following candidates received the degree of Doctor of Dental Surgery: Howard John Adamson, Lindsay Melbourne Finigan, Guy Nobles Stultz.

DENTAL OPERATIONS

*Performed by Officers of The Canadian Army Dental Corps,
In England and France from January 1st to March 31st,
1918. And also showing the Grand Total of Work
Completed since July 15th, 1915.*

Total Operations Reported to	Fill- ings.	Treat- ments.	Den- tures.	Prophy- laxis.	Extrac- tions.	Devital- izing.	Total.
Dec. 31st, 1917	554,370	196,132	106,958	86,723	372,714	58,732	1,375,629
January, 1918	27,655	13,092	4,643	7,543	10,142	2,516	65,591
February, 1918	29,398	13,869	4,816	6,132	11,544	2,549	68,308
March, 1918	27,561	13,971	4,373	9,623	11,160	2,298	68,986
Grand Total	638,984	237,064	120,790	110,021	405,560	66,095	1,578,514

J. ALEX. ARMSTRONG, Col.,
Director of Dental Services,
O. M. F. of C.



Editorial

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VOL. XXX.

TORONTO, JUNE 15, 1918.

No. 6.

THE NINETEEN-EIGHTEEN MEETING OF THE CANADIAN DENTAL ASSOCIATION

The Canadian Dental Association will hold its biennial meeting in the Auditorium Hotel, Chicago, from August 4th to the 9th, 1918. The members of the Canadian Dental Association will be the guests of the National Dental Association, with an opportunity of holding its own separate meetings for the purpose of transacting such business and professional problems as are distinctive to Canada. During the past few months the United States has been drawn more and more closely than ever before to the interests of the Allies. They have been within the past weeks feeling more and more the stress and strain of war, and this liberal impression and goodwill towards the British Empire, and Canada in particular, is a future evidence of the trueness of spirit among the leaders of our great ally.

Dr. W. E. Cummer, professor of prosthetic dentistry in the Royal College of Dental Surgeons, has been invited to present one of the papers at one of the general sessions of the meeting. His name was suggested to the executive of the Canadian

Dental Association by Col. Logan, president of the National Dental Association. The arrangements have been set on foot to have Lt.-Col. G. G. Hume, of the Ontario Hospital, Orpington, Eng., present a paper or address on war prosthesis as practiced in France and England. Besides, he has had the association of all the noted French and British dental surgeons. He is the vice-president of the Inter-allied Dental Congress which was held in Paris last year. The work of war prosthesis must in the very nature of things become more and more important to civil dental practitioners.

Committees in various provinces in Canada have been asked to stir up an interest in the Chicago meeting, which will undoubtedly give the Canadian Dental Association one of its largest meetings. This is a rare opportunity for Canadians to visit the Mecca of dentistry in the United States.

TWO RESIGNATIONS FROM THE BOARD OF DIRECTORS OF THE ROYAL COLLEGE OF DENTAL SURGEONS

At the recent meeting of the Board of Directors of the Royal College of Dental Surgeons, the president of the board, Dr. W. C. Trotter, representing district No. 3, and Dr. C. E. Bean, representing district No. 7, handed in their resignations from the board during the closing few minutes of the session.

THE MUSEUM OF THE ROYAL COLLEGE OF DENTAL SURGEONS

Dentists throughout the country are constantly getting unusual pathological specimens of great interest to the profession as a whole, and especially of interest to teachers of dentistry. Dr. C. A. Kennedy, the curator of the museum, would be glad to receive such specimens. Just because the specimen does not appear to be of very extraordinary value to the finder, it still may be of great value in teaching dentistry. It is expected that in a few years the collection at the College will be tabulated and set out so that the profession may have

the benefit of the collection. Below is an example of a specimen sent by Dr. W. C. Davy, which illustrates two supernumerary teeth, both actual size, in a very unusual position. It is



just such specimens, when collected and put together, form a foundation for discoveries in histology and pathology.

Editorial Notes

Dr. W. Seccombe has resigned from the School Board in Toronto.



McGill University now accepts women in medicine and dentistry.



Capt. A. V. Cashmen, Calgary, is home on leave of absence and reports a scarcity of dentists in France.



A Mr. Hill, of Victoria, has been prosecuted for practicing dentistry without a license.

Dr. Wellington Adams, of Whitby, died May 16th, 1918, at the home of his son in Toronto.



From reports at every hand, Dr. W. E. Cummer's course in Western Canada has received unstinted support.



The board of directors of the R.C.D.S. held its annual session in the college building, May 12th to 18th.



Trustees in rural schools in Ontario have been allowed to vote money for dental inspection of children's teeth.



The Women's Auxiliary have collected \$1,377.34 during the year 1917-18, and sent 17,590 articles to the members of the C.A.D.C. overseas.



Flight-Lieutenant J. Claude Barker, a graduate of the Royal College of Dental Surgeons, Toronto, was accidentally killed while flying in England.



A recent military order has said that dental students in the second year or higher years will not proceed overseas until they have completed their course.



The recent graduates in dentistry and medicine of Dalhousie University have been appointed to the medical and dentistry services of the army.



Rev. Dr. J. W. Graham, of Toronto, alleges discrimination against divinity students because dental, medical, and veterinary students are exempted from the combatant forces.



The following officers of the C.A.D.C. left Winnipeg for the East on May 23, 1918: Capt. N. C. Carmachiel, Capt. D. L. Brown, Capt. C. F. J. Jackson, Capt. K. M. Johnson, Capt. J. E. Thompson.



Dr. W. E. Cummer, Professor of Prosthetic Dentistry in the Royal College of Dental Surgeons, is giving illustrated lectures and demonstrations in Winnipeg, Regina, Calgary and Vancouver.

It appears that Capt. Walt, of Sterling, is endeavoring to recover his practice from Dr. Wright, to whom he rented it during his absence overseas. The trial was before Judge Britton, in Belleville. Judgment was reserved.



Reports persistently come in that dental officers are being appointed to the A.M.C. These reports do not say in what capacity, but we presume it is to render dental services. It seems impossible for some military authorities to get it into their heads that there is a Dental Corps.



Mrs. John Featherstone laid a complaint with the Board of Health in Hamilton, against one of the school dentists. The charge was that he had slapped her nine-year-old daughter while in his chair. At the investigation the dentist was completely exonerated from the charge.



The members of the Saskatchewan Dental Society, in the annual meeting at Moose Jaw, held a banquet, at which Silvester Moyer was toast master. The profession in Ontario will be glad to know that Dr. Moyer has returned to practice and has maintained his former reputation as a toast master.



The Forsyth Dental Infirmary will hold a competitive examination for graduates in dentistry for appointments on the permanent staff for full time service at \$1,000 a year, or half time, \$400. Appointees will have the advantages of all the reports and clinics and research work of the infirmary. Applications should be made at once.



Members of the Saskatchewan Dental Society in attendance at the provincial meeting were as follows: Drs. R. H. Grant, Shaunavon; P. W. Winthrop, Saskatoon; F. R. Graham, Estevan; R. A. Rose, Swift Current; G. A. Herrington, Morse; Harold G. Carson, Weyburn; C. M. Truman, Craik; W. J. Wilson, North Battleford; A. J. Brett, Grenville; W. G. Wallace, La Fleche; G. L. Croslus, Assiniboia; J. A. King, Humboldt; G. Moyer, Rosetown; S. B. Ritner, Gravelbourg; Dr. Anderson, Swift Current; T. I. Robb, S. J. Burns, L. J. D. Fasken, Dr. Parker, David Barnes, J. K. Lord, C. H. Weicker and W. Fraser Smith, Regina. Capt. Herbert M. Schweitzer, M. B. Parker, G. Ernest Holmes and Sergt. Caldwell of the Canadian Army Dental Corps from Regina were also in attendance.

The Liverpool "Courier" says: "I had the pleasure to-day of meeting Major J. E. L. Streight, of the Canadians, who was captured at the second battle of Ypres, and spent eighteen months' imprisonment in Germany, and then a period of internment in Switzerland. Major Streight had many interesting experiences, but what he was most anxious to emphasize was the gratitude deservedly felt by those Britishers interned at Murren to Mr. Joseph A. Woods, the Liverpool dentist, who has established himself there in order to attend to returned prisoners.

"Men return from Germany without a sound tooth in their heads, and Mr. Woods, entirely without payment, fixes them with a complete new set,' declared Major Streight. 'Mrs. Woods is there acting as his mechanic. Too much could not be said of their devotion, for they will not receive any acknowledgment in any shape even from those well able to give it.'

"I was introduced to Major Streight by General Sir Richard Turner, the Canadian G.O.C., who had also heard of Mr. Woods' good work, and was anxious that his personal appreciation of it towards the Canadians should be set on record."

Review

General Pathology and Bacteriology for Dental Students.

By Guthrie McConnell, M.D. Second Edition, Revised.
Philadelphia and London: W. B. Saunders Company.
1918.

This is the second edition of McConnell's "Pathology for Dental Students." This book is adapted from a larger McConnell Pathology, but it seems to have gotten the attention of teachers of pathology, as is indicated by the rapid exhaustion of the first edition. It is well printed, well published and a well arranged book, with much of general interest. As it shows in the preface, it does not pretend to be a text-book of special pathology and bacteriology of the mouth, as that constitutes a field by itself. This book does, however, cover the general principles of pathology, and ought to be of interest to every dentist, and enough special general pathology to make it of great value to dentists in general.

Dominion Dental Journal

VOL. XXX.

TORONTO, JULY 15, 1918.

No. 7.

Original Communications

INTRODUCTORY REMARKS AT RECENT ONTARIO DENTAL SOCIETY MEETING

C. N. JOHNSON, M.A., D.D.S., L.D.S., Chicago.

Mr. President and Members: I want first to take the opportunity of expressing my great appreciation of the privilege of meeting with you to-day. It was with very great regret that a year ago I was obliged to disappoint you. I felt that more keenly than you possibly could have felt it. When the Committee, in the largeness of their hearts, sent me an invitation to come to this meeting I was immeasurably pleased. I want to express my thanks to them for extending that invitation to me under the circumstances. I said to your Committee last year that I believed it was the first time in all my professional experience that I had been obliged to disappoint any organization before whom I had promised to appear. As to the President's address, it was very interesting to me, indeed, to hear his recital of the history of the development of this Society, the development of dentistry in this province. I was glad to hear him mention the names of those whose memory I revere, as you all revere them. I want to congratulate the members of the profession in Ontario to-day on the development of recent years. I want also, in that connection, to pay a very high tribute of love and esteem to the men who went before us and who organized dentistry in this province in the early days. I was deeply interested in the President's presentation of this new phase of dentistry which is going to confront us more and more as the results of this war are brought home to us. This is all new to me, this action of the fumes of these acids that are used in the manufacture of munitions. I shall read that paper when it is published with a great deal of interest, and I know the profession will read it not only with interest but with profit. I thank you, Mr. President, for bringing that message to us to-day.

THE INTERPROXIMAL SPACE AND CONTACT POINT

C. N. JOHNSON, M.A., D.D.S., L.D.S., Chicago.

Read before the Ontario Dental Society, May 1st, 1918.

In announcing the subject of my talk this afternoon, I must acknowledge that it is an old subject. Part of the time will be devoted to a talk upon this subject, and then, if there is any time, I shall be very glad to have questions asked pertaining to the subject by members of the Society, and if I can answer them I shall be glad to do so.

The subject is "The Interproximal Space and the Contact Point." An old subject, but I believe, Mr. President, it is a subject that needs emphasis to-day more, probably, than any other subject in operative dentistry. I want to go as briefly over it as possible because of the breadth of the subject. I want to define for you, if you will permit me, the interproximal space and its function, the contact point and its function, and the function of the gum tissue filling the interproximal space. The interproximal space, as you all know, is that space situated between the proximal surfaces of two teeth as they stand side by side in the same arch. It is pyramidal in form, with the base of the pyramid located at the alveolar process, the apex at the contact points on the proximal surface. The gum tissue filling that space naturally takes on the form of the space, it is in the form of an arch, with the crest of that arch located at the contact points, the function of which will be gone into in detail later.

Now, the reason that that space is placed there and filled in with gum tissue is for the protection of the proximal surfaces of the teeth—the protection against decay. It does not always protect, but that is its function. If that space were left open and unfilled with gum tissue we would have decay going on very extensively in every interproximal space in every mouth susceptible to dental decay. If that gum tissue is in a normal condition, if the contact point is normal, if the space is normal, dental decay in the proximal surface is an exception. Not only that, but the chief function of that contact point and that interproximal space is to prevent the lodgment of food materials between the teeth and their retention there.

The contact point is that small rounded eminence on the proximal surface of the teeth as they approach each other in the same arch, located nearer the occlusal than the gingival, and nearer the buccal than the lingual. I said a small rounded eminence, and that is practically what it is. The normal form

of the contact point on human teeth is a rounded contact of extremely small area, and that pertains to all of the teeth in the human arch normally. I made that statement many years ago before one of the western dental societies, and a dental anatomist in the audience, who knew more about dental anatomy than I could ever learn, in discussion, corrected me. He said the statement that the contact was narrow was true as applied to the bicuspid, as applied to the cuspid and incisors, but it was not true when applied to the molars. Said he, the contact is wider between molars than between these other teeth. In those days I went armed; I carried natural teeth in my pockets. I don't commend that as a practice for dentists, but it served me a good turn at that time. I pulled two molars out of my pocket, held them together in the same relation they occupied to each other in the arch, held them up to the light and asked him to tell me the area of the contact between those molars. The area was infinitesimally small, and he was broad enough a man to come before the Society and say he had been mistaken, that his judgment had been formed simply by looking in the mouths of his patients and gathering an impression as to the greater buccal-lingual width of the contact between molars than the other teeth, because of the greater buccal-lingual width of the teeth themselves, and that gave him the impression that the contact was wider between molars.

The reason I tell you this story is because I want to emphasize the fact that the contact point between molars is very small. As Dr. Black has said, it is about the area of contact we would get if we held two marbles together. What is the philosophy of that narrow contact? In the mastication of food we find there are some fibrous materials that pass those contacts, on account of the individual movement of the teeth in the arch. If that contact is broad those fibrous materials are held between the teeth, and you all know the result of that. If you hold food materials between teeth, in the environment they meet in the mouth, you will inevitably have a decomposition of that food material and the formation of acids and a breaking down of the enamel in the form of decay. Not only that, but the deleterious effects of the wedging of food materials in the interproximal space, and permitting it to remain there, go beyond the tooth tissue itself. The chief injury is done to the supporting structures of the teeth. The moment food materials are permitted to remain between the teeth, they start down in that space a pocket. I said a moment ago that the normal

form of the gum tissue was an arch with the crest of the arch at the contact point. Now, the philosophy of that is this, when food materials are forced in there, that arching and sloping form of the gum contributes to carrying the food out of the interproximal space, but suppose that food is packed in there and permitted to remain, on account of the broad contact, you will have a condition set up where you have an inverted arch with festoons of gum standing farther crownwise buccally and lingually than midway between the teeth, and that creates at once a receptacle for food material, and the moment you get food leaking past the contacts you have that injury beginning with the gum tissue which leads to a pyorrhea pocket. I have heard the estimate made that eighty per cent. of the cases of pyorrhea to-day were started by faulty contacts allowing food material to lodge between the teeth and cause irritation. If that is true, we are up against a serious problem as dentists in preventing that sort of thing in the mouths of our patients. Now, how shall we prevent that? I am going to repeat this probably at the close of the lecture, but I want to say now in this connection that it is our duty as operators to watch the conditions in the mouths of our patients. When a patient applies to us for any service, such as the filling of a cavity in a tooth (you know I sometimes think that that filling is one of the merest incidents of dental practice), we are too inclined to think only of that cavity in the tooth. The thing we want to have in mind most vividly is the whole condition which surrounds that cavity, and the tissues which surround the tooth are more important even than that cavity in the tooth, and unless we have close observation of the patients as they come to us and show them the dangers of the lodgment of food between the teeth, unless we watch that one thing, all of the beautiful operations we may perform otherwise will practically go for nought. There are more teeth lost to-day as the result of the failure of the supporting structures of the teeth than as a result of dental decay itself. In every mouth you examine watch for these food particles. Very frequently a patient will tolerate food wedged between the teeth on the assumption that it doesn't do any particular harm and also on the assumption that it cannot be remedied. The lesson I want to bring to you is that that can be remedied in every case.

When we have a cavity coming to us in the proximal surface of a tooth, the proper management of that case should involve the restoration of that tooth to its normal form, whether that is the particular form the tooth had before it

decayed or not. I want to emphasize that. Nature sometimes does make a mistake in the individual forms of teeth. Probably the mistake of Nature in the form of a tooth has resulted in that cavity coming in the first place, and it is our duty to take that case and restore it to a normal form which that tooth did not have in the beginning. How shall we do that? In every instance where a cavity has begun to form there is inevitably a dropping together of those teeth; the moment the contact becomes involved those teeth will drop together and we will have a narrowing of that interproximal space. In operating upon that tooth we should wedge that tooth back to its original position in the arch before operating at all. Then we should so contour the filling that we produce normal contact with the tooth next in line and prevent lodgment of food materials in the interproximal space. You may take one of those cases where the gum tissue has been practically crushed out of the interproximal space by the lodgment of food, and if you manage that case properly you can restore contact, and then watch the condition of the gum and you can fill back that space with gum tissue in nearly every case. The management of that does not mean merely the filling of the cavity and the restoration of the tooth, but it means the management of that gum tissue so that it will have a chance to come back.

I am very partial in this separating process to the use of gutta percha; I like it better than india rubber that has been used so much. I have not placed rubber as a separation between teeth for years, though I might find a case to-morrow where it would be needed, and if I did, I would use it. My objection to it is that it inflicts unnecessary discomfort on the patient. Its tendency is all the time to work up into the interproximal space under the gum and not do any wedging at all. One of my students came to me one day and said: "I can't separate these teeth." I said: "What have you been using?" He said: "India rubber." I said to him: "Why can't you separate the teeth with it?" He said: "It comes out every time." I went to the patient, noted the condition of the gum tissue, took an instrument and went up in the interproximal space and pulled the india rubber out from under the gum. That is typical of what happens unless you protect the gum. If I were going to use it, I should build first of all a bridge of gutta percha across the gingival portion of the cavity to prevent the rubber from slipping too far rootwise. In using gutta percha you can let it remain a week, and in a very stubborn case it may remain longer. I have one case in my prac-

tice that I saw a few days before I came away, and I had the gutta percha in there for a month. That was a case where I wanted to tighten up the contact further back, however. In such a case you should build it sufficiently high so that the opposing tooth impinges against it and then make the gingival wall flat. If you don't do that it is likely to be driven up into the interproximal space. Pack gutta percha in there and then let the patient masticate upon it. That not only separates the teeth and tightens up the contact, but it puts the pericemental membrane in such a condition that it will not rebel against any operation you make upon it.

You have all been presented with the spectacle of teeth rebelling against the insertion of gold foil where the membrane did not stand up against the mallet blow. The reason of that is that the membrane has become sensitive through lack of use, and it is lowered in tone. If you tie your arm up for a time the muscles of that arm have lost their tone. The same thing with that membrane. You take gutta percha in a case of that kind and instruct the patient to masticate on it for two or three weeks and that membrane will be brought back to tone.

Now having wedged those teeth apart, then make your operation, whether it be of gold foil, or amalgam or a gold inlay, fill that up into full contour and round the contact point. There is one place about that filling that needs to be made harder than any other. We have all been taught that the occlusal surface of a filling should be made very hard. But harder even than that should be the contact point itself. The reason for that is that we find the lateral wear upon these contacts is quite severe. This wear will result, in a natural tooth, in facets being worn in the surface of the enamel, and the enamel is a very hard structure. You will see if you extract the teeth from an adult of more than forty years, broad facets on the proximal surface where the contact has been. That has a tendency to loosen up those teeth, it has a tendency to lessen the stability of the arch. If that will occur with the natural enamel, it will occur in our fillings. To me one of the chief limitations of amalgam as a filling material when applied to proximal cavities is the fact that it will not stand up well under this wearing. I have never seen an amalgam filling that had been in the proximal surface of a molar or bicuspid any length of time, in a mouth where there was much wear, and where there was this tendency to the individual movement of

the teeth, in which there was not worn a perceptible facet inside of a year.

The next best thing is gold foil, and in the building up of gold foil when you come to that contact point mallet beyond actual density. You can increase the hardness of gold long past the point where you have high specific gravity. You can use a light steel mallet and increase the hardness of the gold so much that it will ring almost like steel. That is the kind of contact you want to make on all gold fillings where they are on proximal surfaces. But when it comes down to making satisfactory restorations in these cases I will take off my hat to the gold inlay every time. There is no other virtue of the gold inlay so great as the ease with which we may restore the contour and get hard rounded small contacts upon these proximal restorations. That appeals to me, and always has, as one of the great virtues of the gold inlay. Probably the very best contact we could get would be a porcelain inlay, but we all believe there are limitations to it in these masticating areas. So I employ gold inlays for that purpose more than any other. In order to get a very hard contact point on a gold inlay, if it is in one of those mouths where there is that manifestation of proximal wear, with facets in the enamel, with the loosening up of the teeth in that arch, I cut away the 22k. gold over the contact and flow 18k. solder over it. In placing these gold inlays in the tooth I want to make some practical suggestions. If I repeat them to-morrow I hope you will forgive me. When we have decay going on in the proximal surface, we find this dropping together of the teeth that inevitably loosens up the contact of one or two teeth on either side of the decayed place. The object of this operation is not simply to fill that cavity but to make a better condition in that region of the mouth; and in those cases, particularly where there has been that dropping together perceptibly, where there has been this loosening up of the contacts, I will wedge those teeth sometimes a month or two months until I have not only got the space I want, but until I have tightened up the contacts on either side of the affected tooth. When I make an inlay for that tooth, I try to make the mesial-distal width slightly more than the cavity would seem to call for. The only way it will go to place will be with a mallet impact snapping it to place, and tightening those teeth up until the patient complains about it; and I don't feel I have made a satisfactory operation unless the patient complains of it being too tight at first. You can invariably tell the patient that it is only a temporary sensation; that it will pass

away in a very short time. If you have this in mind when making these operations you will not only do a service to that particular tooth, but improve the integrity of that arch on that whole side of the mouth and give that patient a better grip of food materials. I commend that to your careful consideration, that you think not only of that one cavity but of the other teeth. It is becoming an increasingly important matter to watch these interproximal spaces and look out for the tissues surrounding the teeth. In the past, when a patient has come to us, we have gone on and filled the cavity, and that was the big thing in our minds. It is not the care of the individual tooth that should so much claim our attention as it is the condition on that whole side of the mouth.

I want to present to you a problem that was presented to me early in my study of this matter of the contact point and interproximal space. I had been confronted at times with this thing happening—I said a moment ago that if you had a normal tight contact point, and a normal interproximal space, you would ordinarily not have trouble with the lodgment of fibrous food between the teeth. This thing happened to me on my two lower bicuspid. I found food wedging in there and I said, I think there must be a cavity or something wrong. I tested that contact with a ligature, and I found that the silk ligature snapped between the teeth, showing that that contact was small and rounded, and yet I was troubled with the fibres of food getting in between those two teeth. I said to myself all my theories are knocked in the head. Then I began to study that problem. I looked at the teeth from the buccal aspect, and everything seemed normal. Then I took a bite in modeling compound and poured a plaster model and looked at it from the lingual aspect and I found the upper bicuspid had twisted a little and the lingual cusp was coming right down between the two lower bicuspid in such a way as to act like a wedge and spring the teeth apart at each occlusion. I took a stone and flattened down the cusp on the upper bicuspid and I never had one particle of trouble afterwards. In some of these cases where food lodges and you examine them from the buccal aspect, everything looks normal so far as concerns the relation of the upper to the lower teeth, but take a bite and study it from the lingual aspect and see what happens. In every case you will find that the cusp of the opposing tooth impinges over the contact points of the affected teeth in such a way as to act as a wedge and spring those teeth apart. A man does not always profit by his own experience. A few

years later I began to be troubled with food wedging between the left upper second and third molars, and then after a little time between the right upper second and third molars, and I attributed it to the faulty form of the second molars; you all know those are sometimes oblong in form, and I attributed it entirely to that. I have seen many patients younger than I am who have developed pyorrhea from the wedging of food, and I even went so far, on account of my fear of a pyorrhea pocket, to consider the possibility of having to extract the third molars, and yet I have serious objection to the extraction of the third molar unless there is necessity for it. Suddenly it occurred to me to take a bite and study the condition, as I had done with my lower bicuspid. I had gone on for a year nearly picking out fibrous food from those upper teeth, but when I took a bite on either side and I found the lower molars coming up in between the upper ones precisely as the upper bicuspid had come between the lower, and I ground those off and relieved that difficulty. Just a few weeks ago on the right side of my mouth the same thing began to occur again, and I took a bite and I found a cusp coming up again, I ground it off and made models and brought them here to show you.

Now I want to make this clear, that in every case where you are confronted by fibres of food wedging between the teeth and you can't account for it with the broad contact, and where everything seems to be normal with the filling you have inserted, you take a bite and study it. Your patients will appreciate the service you give them more in this particular thing than any other I know of. They go on month after month tolerating the wedging of food between the teeth, thinking it cannot be remedied. It can be remedied in every case. In some cases not so quickly as in others. You may be disappointed once in a while when you grind off the opposing cusp. It is only in those cases where those teeth have been wedged so long that they are loosened a little bit and spring quite easily. In those cases you may find food will leak in a little for a time between the contacts, but if you grind the cusp so that the wedge force is taken away, the condition will all clear up after a while and you will change that interproximal space from a dangerous one to one perfectly safe.

I commend this study to the members of this Society. It is an old subject, but I want to tell you, gentlemen, that the more I study this matter the more I am impressed with the fact it is one of the most important questions connected with operative dentistry to-day. In the future it is going to be more

important than in the past because in the future our patients are going to be more highly keyed nervously and the irritations that come to the supporting structures of the teeth are going to be more serious than they are at present, and we must be so equipped with our knowledge and with our conception of the conditions presented to us that in every case when a patient comes to us with that difficulty we will be able to remedy the condition, and we can do it in every case.

DISCUSSION.

DR. DEVITT: Do you think a good deal of the pyorrhea comes from or is due to the effect of our work in the proximal surface?

DR. JOHNSON: Some of it does. I saw a statement the other day in print by a man who said ninety per cent. of the cases of pyorrhea were due to defective dentistry. I do not agree with that in any particular at all. A great many cases of pyorrhea come to us in which there has been no dentistry done at all, but I do say that a very large percentage of the pockets that begin down between the teeth in the interproximal space are due to irritations from leakage of food in there, and if we have operated upon that case and then food leaks in, that is due to our defective work. But I am always very much inclined to defend my profession against charges which are sometimes so carelessly made. I don't want anything to go in print that will be a reflection upon my profession, and I would combat a statement that any man would make that ninety per cent. of the cases of pyorrhea were brought about by defective dentistry. I know there is a good deal of defective dentistry, because I have done some of it myself, but I do want to say this, that the function of the dentist and the things that he is doing to-day for the people are for the benefit of the people in the large majority of cases, and I will not stand willingly and hear my profession charged with doing more harm than good. (Applause.)

DR. CLARK: You said a moment ago that you took your hat off to the gold inlay as our best opportunity to establish a good contact point unless perhaps it was the porcelain inlay. Would not porcelain have more of a tendency to wear the enamel of the tooth with which it is in contact? Haven't we the advantage in the gold of the tendency to simply polish rather than wear?

DR. JOHNSON: I think if we have a porcelain inlay baked to a smooth glaze we will not have friction any more than there

is with the gold. If it was anything short of a smooth glaze we might have that.

DR. CLARK: We see the effects of porcelain where an artificial plate or a porcelain crown comes against the gold or gold shell on the opposite denture.

DR. JOHNSON: That is very true. Porcelain will wear gold very rapidly.

DR. MCLEAN: I just want to mention one point. I don't think the contact point in itself is going to eliminate all our troubles unless you have a good marginal ridge. I don't think it should ever be mentioned in connection with decay unless in connection with the marginal ridge. They go together. If you have a contact point without the marginal ridge your contact point is not of as much value.

DR. JOHNSON: I want to express my appreciation to the speaker for what he has said. The function of the contact point is to divide the food buccally and lingually as it is crushed between the teeth, and that marginal ridge of enamel means much in the reproduction of our restorations. I was going to mention that to-morrow. The restoration of that marginal ridge is a very important thing, and we will find this very many times, it is only as the result of the constant wear upon those natural teeth, not only of the contact points making these broad facets but the wearing down of the marginal ridge of enamel which begins to permit of the wedging of the meat and food past the contact point. We do need that marginal ridge built up.

DR. PROUDFOOT: Taking a middle-aged man with a strong set of teeth that had been worn down by the mastication of gritty tobacco, just down to the contact point, how would you begin to overcome that?

DR. JOHNSON: There are more things that I forgot than the things that I said. I am grateful for that question. When we have that particular wear that the Doctor has referred to in which there is inevitably a facet, it is usually at the edge where there is a practical immunity established to decay and yet a lodgment of food in there may sometimes bring about a cavity in those proximal surfaces. When I get a case of that character, that is where I try to shine as a star in contouring teeth. In operating on the tooth that has the cavity, I exaggerate the contour of the restoration and tighten up the teeth on that side. You will ordinarily find the teeth that have worn down in that way have developed a little bit of looseness; there is not the same integrity of support that was there before that

long process of wear. Then I round off with a disk the sharp edges of the facet in the unfilled tooth. The late Dr. G. V. Black has made the statement that it was a perfectly proper procedure to take a case of that kind and make a cavity in a tooth that did not have one in order to bring about normal contact. I have made cavities in teeth where the original decay was extremely small, and I have made quite large cavities with the idea of restoring contact, and if I found a case in which there was a great deal of annoyance and danger from the wedging of the teeth I would not hesitate to cut in between the teeth and make a cavity and wedge for contour just as in this case you refer to. Those are cases in adult life.

DR. COYNE: Is there any concern as to the interproximal surface where the wedging with gutta percha spreads over a period?

DR. JOHNSON: In every case where you pack gutta percha in one of these cavities, get the gingival wall flat first, and in packing gutta percha in let it extend from the buccal to the lingual festoons of the gum so that they are forced just as far back rootwise as the gum is midway between the teeth, and if those festoons buccally and lingually are forced back in that way and you make the operation and dismiss the patient with instructions to massage that gum for a few days, the gum tissue will creep back in there in every case I have ever seen yet. That gum tissue will not creep back in there if you have left the arch inverted, creating a pocket so that food material will pack in immediately after the operation. I try to avoid lacerating the gum. You can press it out of the way without lacerating. If you press it back to the proper form you will find that the gum tissue will creep right back in. But, if you leave a sloping gingival wall to the cavity you will simply have the gutta percha crush down in the interproximal space and injure the gum and create a worse condition than you had.

DR. WEBSTER: I noticed in discussing the subject you said you didn't hesitate to tighten the contacts by one or two operations, in normal occlusion. Would you judge then that occlusion would be interfered with and there would be probably a traumatic occlusion later on? And there is another point in connection with contacts in molars. I quite understand the gentleman's consternation when he was presented with the two teeth. Dr. Johnson cuts this pretty fine. I take the meaning of contact to be the touching point, and that touching point may be any of the points of two things, and yet be touching points. The buccal-lingual diameter of these teeth, the molars,

is quite wide, but the nearness of the tissue, though not in contact, is very close, and may be taken for the contact point, and is always a susceptible area. I think he surely did not intend us to believe that the buccal-lingual diameter and the full anatomical form was not in any sense to be interfered with but fully restored. Though the contact point is the touching point, yet there is very great nearness of the touching point mesio-distally between the teeth.

DR. JOHNSON: The first question raised by Dr. Webster is a very important one. If you wedge the teeth extensively, provided the cusps are of any length, it would change the relation of one tooth to the other, and you must study the occlusion after you make your operation and grind the impinging cusps in such a way that you will not have injury made to those teeth on closure, otherwise the patient will be uncomfortable. That is something that is very important. It is a simple matter to do that.

Now in regard to the contact of molars, there is no question about the difference in the bucco-lingual width of those teeth. I am talking about the actual point in contact. We do not round that contact so much upon the proximal surface of a molar as upon a bicuspid for instance, but we must be very careful not to have any appreciable area in contact. In other words, when we are trimming the filling on the proximal surface of a molar we should let that slope be quite abrupt from the contact point away buccally though not so much lingually. Of course we must restore the anatomical form of the tooth, but the point I want to make is this, so many men in looking into a mouth will judge of the area of contact by the appearance in the mouth. When you look into the mouth and see those broad molars with saliva all over them you are likely to get the impression that there is a broader contact than there is. The way to test that is to slip a small ligature past the contacts in the space and then pulling the strands of the ligature up tight occlusally see the distance between those strands; that distance is greater than the actual contact, but it will give you an idea of the bucco-lingual area of that contact. If you want to judge of the longitudinal area, pull those ligatures buccally and tighten them up, and if your contact is narrow there will only be about a millimeter and a half in width between those two strands, even on the molars.

DR. SNELL: Will you give us your reasons for being in favor of retaining the third molars?

DR. JOHNSON: I am getting off the subject. I always do. My reasons for retaining them are these: we can't always judiciously retain them; we can't retain an impacted tooth, causing irritation, it is a dangerous thing. We cannot retain them in some cases because it requires mechanical ability to brush that tooth and keep it clean, and it decays in spite of us, and we had better get it out of the mouth than have it diseased.

The reason for retaining it is that the contacts are never held quite so tight together after the third molar is extracted as they are when it is in there. The presence of that third molar helps to keep that arch keyed up. There is a tendency all the time to hold the other molars tight together. I have seen some cases where the extraction of the third molar has resulted in loosening up the contacts along two or three teeth on that side of the arch.

DR. HUSBAND: In a mouth where there was no sign of disease, either caries or whatever it may be, as years go on these contact points wear down so that you have the facets develop. Is there no compensating force of nature to make up for that wear? Is there no natural way that that wear is taken up? Will they come together by the force of the cheeks or any other force? And then coupled with that there is the question of tightening up the contact. I suppose that is a case of the lesser evil, having one good contact and the other flat and the facets forced together?

DR. JOHNSON: Yes, that is my idea. I like to keep the contacts as tight as I can on account of the added integrity of the teeth of the arch on that side.

DR. HUSBAND: Would you say Nature took care of that without interference, however, provided there was no disease in that mouth to bring about a condition of caries?

DR. JOHNSON: Very frequently that does happen. We find this in many of these cases where this proximal wear upon teeth has resulted in a material shortening of the entire arch. I think it was estimated by the late Dr. Black that arches could be shortened a quarter of an inch from one third molar to another by this proximal wear. You will find ordinarily in those cases where there is apparently no disease that the gum recedes a little in the interproximal space, the spaces narrow somewhat mesio-distally without any apparent interference with the normal function. That does happen, especially in those cases where all of the teeth are retained, that third molar as well, and we may see cases of an arch where the arch has been narrowed quite a bit on account of this proximal wear

and still present a normal condition. In those cases I would not interfere. But in every case if food began to wedge in between the teeth, as it may at times unexpectedly, I would take care of that one space at least.

DR. CAMPBELL: Referring to the grinding of those cusps, have you any particular shape that you would grind them?

DR. JOHNSON: The cusp is usually worn up into a sharp point. That sharp point constitutes a wedge. I would grind that down flat to take away the wedging force, and let it get more of a grinding force so that it does not spread those teeth apart.

DR. THORNTON: In the restoration of mesio-distal cavities, what method do you suggest for working your matrix close to the cavity?

DR. JOHNSON: In the operation of amalgam and gold foil where we use the matrix, I have been in the habit of packing soft gutta percha in the interproximal space between the tooth next in line to the matrix and forcing it up to position with that soft temporary material, and that is sufficiently rigid to hold the matrix to form, and yet it is not so rigid that it cannot be sprung back so that you can force the gold or amalgam over the enamel margin. If you have a stiff rigid material in there—and I have seen men use a wooden wedge—I would not feel that I could spring that back sufficiently so that I could be sure I could force the filling in between the margin and the matrix. Use a thin steel matrix or any thin matrix that can be sprung with the plugger.

DR. FLEMING: I would like to ask your method of polishing a gold foil filling once you have a good hard contact point? I have spoiled some good work that way.

DR. JOHNSON: We all have. There is no mistake in this whole category that I have not made myself. I have had many a heartbreak, just as the doctor has had himself. I try to build the filling as near to form as I can when I am building it up. I have in my mind a picture of the form of that tooth as vividly implanted before I begin to build it as it is when it is completed, and I build to that, so that I do not have a large mass of material filling the interproximal space. Sometimes I use the matrix and sometimes I do not. If I use the matrix I take some time in fitting it, so that it shall conform to the contour I want. After the gold is finished and built up and that is, built just as tight as I can mallet it against the contact point of the tooth in line—the matrix is slipped off, if I use one. If I do not I simply use a burnisher in the inter-

proximal space, and pay all my attention to the gingival portion of the filling first. I never touch the contact at all until I have finished the gingival portion of the filling down perfectly even with the gingival margin of the cavity and up the buccal and lingual walls. Now we have the margin of that proximal filling finished. The point is to smooth the rounded contact without cutting it down. It is supposed to be tight against the tooth next in line. At this time I will probably slip a separator on and spring those teeth apart very gently and carefully. In putting a separator on you have got to be careful that the jaws do not impinge at the point where the filling joins the enamel or you will pulverize the enamel. Then take not a disk or strip, but a very thin steel instrument, and force that in, tightening the separator; force that back and forth between the contact point of the tooth and the contact point of the filling till you have worked it in between, and let that hang in there for a minute. The strip I use to trim the gingival portion of that filling down is a narrow strip not more than a millimeter and a half or two in width, so that it will not cut the contact point. Now, instead of a narrow strip I want a flat, broad strip, one that is very fine; and as I take this steel instrument out, slip that broad finishing strip in there and bring it back and forth over the filling, simply to round it and smooth it, and you can round and smooth that as much as you wish without cutting the contact point at all. Then when you have done that you have that filling come back tight against the tooth next in line. You have not cut down the contact point; you have simply rounded it and smoothed it.

DR. OVERHOLT: I would like to ask again whether it is your opinion that extreme separation is likely to afterwards cause a pyorrhea pocket?

DR. JOHNSON: Not if you separate slowly and protect the interproximal space with a proper filling. If you use anything like india rubber that will cause severe irritation you are liable to injure the soft tissues, so that you will have the beginning of a pyorrhea pocket. I want to urge the greatest care in the manner of separating teeth.

DR. OVERHOLT: I asked you that question for this reason, that I have had a little experience in my own mouth. Two incisors were filled in 1880, and the filling remained possibly until the teeth were removed, but pyorrhea pockets developed some years after, and those teeth kept separating continually,

until they were lost, from the time those fillings were put in.

DR. JOHNSON: What was the method of separating?

DR. OVERHOLT: A rubber and wooden wedge.

DR. JOHNSON: That wooden wedge will drive the gum tissue out of the interproximal space faster than it can grow in. At the same time we might have a condition occur as the result of faulty occlusion absolutely irrespective of the operation on the tooth at all. There are so many reasons for pyorrhea that you can't attribute the pockets to any one thing.

DR. SCOTT: On teeth that are worn down pretty flat, do you make the contact point closer to the occlusal?

DR. JOHNSON: Yes; you have to bring that contact relatively near the point where it is normally upon the tooth. I have in some cases let that contact extend slightly further root-wise, but I like to bring the contact in those cases pretty near to the occlusal surface. Your marginal ridge is gone there, and you will never have as good masticating apparatus as you had before.

DR. DAY: When a tooth is extracted should there be some method used to keep the other teeth in permanent position?

DR. JOHNSON: Now, you are getting me into trouble. That is the hardest problem in dentistry to-day. The question is asked: When one tooth is extracted should anything be done to fill that space and maintain the normal occlusal relation of the teeth of one jaw to the teeth of another. Theoretically it should be done in every case, but I do not always do my duty in this respect. When the first permanent molar is lost I consider that the most serious thing that can happen in any jaw. Supposing that molar is lost and the second bicuspid perfectly sound and the second molar perfectly sound, it takes more courage than I have to cut into those teeth and make a restoration. I will tell you what I do. I watch that case as conscientiously as I can, and if I see that second molar beginning to tip mesially and lingually too much I will make a restoration there; but I tell you I can't give any rule that will apply to all cases. I sometimes tell my boys in college, I can teach you technique, I can teach you how to do things, but I can't teach you judgment; I can't cultivate your "think tank." You have got to do that yourself. This is a case where you have got to use your own judgment. I would not dare to go on record as making an invariable rule that I should use in any case of that kind.

Another subject aside from this interproximal space and contact point is that question of the first permanent molar,

and we in our profession have been remiss in our education of the public on that. There is a whole sermon on that, and some day I will give it to you.

DR. SHANTZ: Following this question that was raised, a cousin of mine came to me about fifteen years ago and I tried to persuade him to let me make such a restoration for some missing teeth in the lower jaw, and he declined so to do. The next time he was going through—and that happened about twelve years after the first visit—he told me he had trouble with food getting in between the upper teeth, and he said he had had several dentists looking for it and they failed to find it. I examined it, and I imagined I found sufficient excuse in the tipping forward of the tooth at the distal-buccal corner, which acted as a wedge and had spread it. I cut out some good fillings he had in there in the upper teeth, and put him in some new ones with a flat grinding surface, and ground off the lower buccal cusp that I felt had been doing the mischief, and he was relieved. Will Dr. Johnson kindly criticize my efforts?

DR. JOHNSON: I think you did all you could. You can lead a horse to water, but you can't make him drink. We can theorize all we like about what should be done for patients, but they don't always agree with us.

DR. PROUDFOOT: Do you use any speedier method than gutta percha where you need a lot of separation, where you would not impinge on the gum tissue by putting in some other material, such as cotton batting?

DR. JOHNSON: Yes; you may hasten the process. If I was in a hurry to get separation I would place the separator upon those teeth and slowly tighten that separator up as far as it was judicious to tighten it, and then pack gutta percha in—I like it better than cotton—and then see that case in a couple of days and repeat that. In this way you can get quite rapid separation; just about as rapid as you can by placing india rubber between the teeth.

I want to express to you my great appreciation of the attention you have given this afternoon to this subject, and I want you to take home with you the conviction that in the mouths of your patients you are going to study this matter a little more carefully than you ever have in the past. No matter what we say here; no matter what we believe here, none of it is significant unless we take it right to the patient in the chair and apply it so that it will help these people out; and I am going to make this prediction for those who have not been giving particular attention to this matter: if you will

study this for your patient, take those cases that have been uncomfortable and change them to cases that are comfortable for mastication your patient will appreciate that more than any other one service you have rendered. (Applause.)

ORAL HYGIENE WORK

R. G. McLAUGHLIN, D.D.S., L.D.S., Toronto.

Read before the Ontario Dental Society, May 1st, 1918.

I want to make a brief statement as to the standing and progress of the oral hygiene campaign. When we were endeavoring to establish this work in the schools of Toronto, some of us had the idea that if we got this movement once going in the great centres, the work of the Oral Hygiene Committee in a few years would be ended. That was a mistake. I want to say very frankly that at the present moment we have reached the stage of development in the program and campaign of oral hygiene in this province that is decidedly important, if not critical. The Oral Hygiene Committee thought, after due consideration, that it ought to take into its full confidence every member of this Convention so that you might have a knowledge of what was going on, as you ought to have, and having that knowledge, every one of you in your own constituency might get behind and under this movement and be responsible in your own locality for the rousing of public opinion. That is the one thing that is needed just now. You know, perhaps, as well as I do, that in this matter of dental inspection and education, a good deal of progress has been made. In nearly all of the cities of Ontario it has taken root, and in a great many of the larger and many of the small towns of the Province of Ontario good work is being done. Your report that is in your hands to-day will demonstrate to you these statements. But here is the point, the great bulk of the school children of the province are to be found not in the cities or towns, but in the rural sections, away out yonder in the little schoolhouses on the side roads and concession lines. Now this large area has not yet been touched in the matter of oral hygiene and dental inspection. So your committee for the last year or eighteen months has been concentrating its efforts on the introduction of oral hygiene and dental inspection into the rural schools of our province. Some progress has been made perhaps in persuading the Government as to the need and expediency of this. We feel that as long as these

boys and girls in the rural schools, where the greater need really is—as long as the boys and girls are neglected in this matter—they are not getting a square deal. The plan we have in mind, and that we have laid before the Provincial Government, is something like this:

First, that a dental department be established in connection with the Provincial Board of Health. We feel that this matter is a health matter. It must be done in connection with the Provincial Board of Health. In the second place, we advocate that a director of dental service be appointed as head of this particular department with his office and headquarters at the Parliament Buildings. Third, that this appointment ought to be followed by the appointment of three or four dental inspectors as the work progresses and their services are found necessary. Fourth, that the necessary legislation be introduced to enable any township or county as a unit to introduce dental inspection into the schools within the bounds of such community, and that in the fifth place any such townships having decided on dental inspection should have the services of one of the dental inspectors, who shall carry out an examination of the children's teeth in such schools, give proper instruction as to the importance and care of the teeth, and whenever possible deliver an illustrated lecture in the school room on the same evening, to which the parents and friends of that section would be invited.

Roughly speaking, that is the plan we have presented and are advocating to-day to be adopted by the Provincial Government. The Government is in sympathy with the movement; they are only waiting for one thing. I don't think the initial cost is frightening the Government—that is only a mere bagatelle—because we are willing to start in a very small way, but they say they are waiting for public opinion to press them into this. It is an innovation; it is new work; and they say we must feel we are backed conclusively by public opinion before we can make a definite move.

Now, we have been busy as an Oral Hygiene Committee trying to bring to bear upon the Government that same public opinion they are asking for. We have sent out a good many of our men and have asked others from outlying districts to give addresses to public bodies throughout the Province, such as teachers' conventions, women's institutes and other organizations. We may say that in almost every instance we have had the unanimous support and recommendation of these public bodies before whom addresses have been given.

Then another matter, we have interviewed and taken into our confidence the Provincial Officer of Health, Dr. McCullough. We felt, in order to make a success of this matter, we must be in full accord with his opinions and plans. Dr. McCullough was very receptive and sympathetic. He gave us some very sound advice, and said: "Gentlemen, I am with you in the matter, and as soon as the Government sees fit to adopt the measure that you propose, then it will have my very full support." That was a great step, we thought, towards the consummation of our object.

Just now we are anxious to gather all the statistics from the nations in which oral hygiene has been pressed to any practical results. What they are doing in Europe, in the United States, in New Zealand and in other parts of the world, and how they have succeeded and how the whole matter has been received by the public, and the results accruing from this action. That is one thing Dr. McCullough was anxious to have, and that is one thing the Provincial Government would like to have before it.

Then there is another matter your committee has been thinking seriously of, and has come to some definite conclusion upon, and that is to take one township, or a certain community, or two communities in the Province, widely separated, and make an inspection of the schools in that community. In other words, carry out in that township, or a part of that township, just such a plan as I have outlined here, and show the results of our findings, how the public have been impressed, their approval or disapproval of it, and bring these facts before the Premier and his Cabinet. We feel if we are able to do that it will be one of the convincing things that will satisfy the Government as to the possibility of carrying out the plan that we have laid before them.

Then there is another thing we are very anxious about in this campaign of rousing public opinion. It is that every man, every member of this convention, should feel and undertake the responsibility of rousing public opinion in his own constituency, more particularly that he should get after the member that represents in the Provincial House his own locality, and endeavor to educate him so that when he comes down here and the matter is first spoken of he has something definite to say on the matter. If the Premier felt that the members of the Legislature representing this Province had a knowledge of this matter, and were alive to the importance of this matter, and felt that they wanted it in their own con-

stituency, he would introduce it. I feel satisfied of that. The responsibility rests not only upon the Oral Hygiene Committee, but upon all of us. The member of your constituency is a patient of one of you men in your particular town. I don't know who it is, but you know. Go to that man and have a talk with him when the opportunity offers.

I want to say this, gentlemen, that the question of dental inspection in the schools, and especially in the rural schools, is the big problem before the dental profession of Ontario to-day, as it is the big problem, I believe, before the profession of Illinois, or any other State in the Union. I want to say that I have never worked with a committee that was so uniformly enthusiastic and so much in earnest, and so willing to work as the Oral Hygiene Committee that you have appointed. Everyone seemed to realize the importance of the work, and that it has a great future if properly guided. The future efficiency of the men and women that are now the boys and girls in our schools depends to a large extent upon the proper mouth conditions that prevail among these boys and girls. Gentlemen, I thank you for your kind attention.

GOLD INLAYS

C. N. JOHNSON, M.A., D.D.S., L.D.S., Chicago.

Read before the Ontario Dental Society, May 1st, 1918.

I want to take up the subject this morning of the gold inlay, and I want to speak for a moment, if I may, upon the preparation of the cavity for the gold inlay. I speak of that because I have an impression that very many of us in the profession got a wrong basis when we began preparing cavities for inlays. When we first began to prepare cavities for inlays we were preparing them for a matrix, not for a wax model, and the thing held up most prominently to us was this: that we must have the cavity of such form that the matrix would withdraw without distortion, and that we could depend upon oxy-phosphate of zinc for the retention of the inlay. That led to very many failures—failures in the dislodgment of the inlay on account of inadequate anchorage—and the profession had to come to a realization of the fact that if they wanted to keep inlays in cavities they would have to depend upon something else besides oxy-phosphate of zinc and faith to keep them there. The point I want to emphasize is this: that we must make our cavity preparation practically along the

same lines for the retention of inlays that we do for the retention of fillings. There is only a slight difference in the detail of the cavity preparation, and if you will permit me I will go briefly into the formation of a typical cavity in the proximo-occlusal surface of a molar or bicuspid. That cavity so far as anchorage is concerned should have flat seats for the inlay to rest upon. In other words, the gingival wall should be as near as possible at right angles to the axial wall, and to the buccal and lingual walls, and they should join the axial wall very nearly at right angles. The only distinction with that kind of cavity is that we make the angles somewhat sharper for a filling than an inlay; but the principle is practically the same with one restoration as it is with the other. The step in the occlusal surface of this tooth should be made with the floor of the step flat or at right angles to the stress of mastication, and the surrounding walls of the step should join the floor of the step, or the pulpal wall of the cavity, very nearly at right angles. In other words, that cavity should be so formed that when the inlay is driven to place it will be held somewhat by frictional retention between the walls of the cavity. There are two reasons why we want those flat seats for that inlay to rest upon: one is the fact that we have a more secure anchorage against any tipping stress when the inlay rests upon a flat seat than we do if we anchor them upon curved seats. That is one matter connected with retention. There is another matter that to my mind is just as great in importance, and that is the facility for cementing the inlay to place correctly and getting it seated properly. I myself have encountered this difficulty in cementing inlays that I have been able to place the inlay in position without any cement in the cavity, and find it would go to place perfectly, and the margins were all right, and then when I cemented that inlay with all of the cement in position hiding the margins of the cavity, giving me not the same indications as to the point at which stress should be brought to bear that I had before the cement was in place, I have been confronted with the fact that that inlay has been tilted out from one margin or the other and has not perfectly seated. That has not been due to the fact that the cement was a resistance to the proper seating of that inlay, but due to the fact that on account of the cement being in position the cavity outlines were not so clear to me, and I was not so certain of the point at which I should bring stress in order to seat the inlay correctly. That was due to the fact that the inlay was anchored upon a cavity with a curved

base. If all of those cavities were prepared with a flat base and you cause pressure to be brought upon the inlay there is only one way for it to go to place, and it will go down on that flat base nine times out of ten. It is better, therefore, to have those cavities prepared with flat bases.

We cannot always attain the ideal in cavity preparation any more than in other things. I know that in some instances I have fallen short of giving a perfectly flat seat to a cavity for an inlay. Yet, the more consideration I give to that, the more securely are my inlays placed and the more accurately am I able to cement them after they are finished. I want to commend that for the consideration of the members of your society.

We prepare most of these cavities of course with stones, that is a very great advantage—stones and discs. If we can keep steel instruments away from cavities, their preparation is not so disagreeable to the patient as if we are obliged to use steel. I refer to the impression that the touch of steel to tooth tissue has upon the individual. When we prepare most of these cavities with stones, after we have opened the cavity bucco-lingually and given the proper outline to the cavity, we do not have those angles that I referred to between the walls of the cavities, but it is only a little cutting further in the gingival region with an inverted cone burr carried buccally and lingually along the gingival wall to flatten that seat and produce those angles. There is not very much cutting necessary either with a burr or excavator to sharpen up those angles, and the change in that cavity formation, after we are through with the stone, from these walls that are curved to these flattened walls, will make a very material difference to the security of the operation when you are through with it.

Now I want to say just a word about the preparation of the wax model. I am not going to tell you what kind of wax to use, whose make of wax, whose investment or anything of that kind; I am going to suggest the qualities that I think a wax should have to work to the best advantage. A wax should be of a consistency which in ordinary room temperature may be handled in the fingers without marring the sharp edges; it should melt at sufficiently high temperature so that it can be handled with the fingers without marring it. The degree of heat that is necessary to warm that wax will vary according to the make of the wax, the amount of paraffin in it and so on. I believe in using one kind of wax in the winter and one kind in the summer, when the weather is hot, because a wax which

will work well in summer, when the weather is hot, without distortion of the margins of the inlay, as you are working it, will, in the winter in cold weather, be very brittle to work and it will not work as nicely in the winter as will a wax that in the summer would be too soft, and so I work with one kind in the winter and another in the summer. Any wax should be heated in water not too hot. It is better to place the wax in water that is sufficiently warm that it will soften the body of the wax from the surface through the entire mass of wax without melting the surface of the wax. Therefore I believe in using water that is not too hot, and leaving the wax in it for some time as I am finishing up the preparation of the cavity. That wax when it comes out of the water can be squeezed in the fingers and the whole mass moved. Just before I place that in the cavity I mold the wax with the fingers so that it will conform somewhat to the formation of the cavity. I am particular about one thing, if it is a proximo-occlusal cavity in a molar or bicuspid, I want to thin the point of the wax down so that when it is placed in the proximal portion of the cavity the end of the wax will impinge against the gingival wall of the cavity; I want to get some resistance against that wax as I am forcing it in. That is another reason why you want a flat seat to the gingival wall. I believe in using some force in putting the wax in the cavity. Having it squeezed out so that the wax will impinge upon the gingival wall, then with the finger over the entire mass of wax force it down into the cavity in the proximal and occlusal portion with some degree of force. Just before I place that in the cavity, when it is still soft, I pass it quickly through a flame to soften the immediate surface so that I get the finest possible print of that wax upon the gingival margin—that is a hard place to fit with a wax model—forcing that down with some degree of force and keeping the pressure on there for one moment. Don't simply force it into place and let it go. Wax may possibly—it is claimed that it does—change its form when it is heated and when it is cooled. Keep pressure on there until you are certain that the wax has begun to chill the least bit. Then have the patient close down upon it. After the patient has closed down upon the wax there is some surplus hanging over at the buccal and lingual surface. With pliers brought under the surplus it may be gently and carefully lifted out. If the wax has been properly fitted we have an exact outline of all of the margins of the cavity, as well as the adaptation of the wax to the inner walls of the cavity. Then with a pen knife the surplus is trimmed

off towards the gingival, and in that way you reproduce the interproximal space we were talking of yesterday. This is the reason now I want that wax so that it can be handled in the fingers without distortion, because the carving on that wax model is done mostly out of the mouth. You can handle it in such a relation when it is in your fingers that you can carve it more quickly out of the mouth than in the mouth. It is carved up roughly at this time before it is placed back in the cavity. The contact point is not cut down at all, just simply rounded up. It is placed back in the cavity. Now when it is placed back the patient is instructed not only to close down upon it but to chew upon it as if it were gum or something of that kind. The reason for this is if you have simply the up and down motion of the jaws upon the wax and you carve to that and make your reproduction, you will find when the patient begins to masticate, the opposite tooth will impinge upon the inlay in positions where it didn't with the straight up and down movement; and I am very anxious to have that wax model carefully prepared before the casting is made. When that is placed in the mouth and the patient instructed to chew on it then there is more carving done with that inlay in the tooth in the mouth with carving instruments such as you all have. In this connection I want to emphasize what was brought up by one of the gentlemen yesterday in connection with the anatomical form of the occlusal surface of that inlay. That is something we have all fallen down upon. I know when I first began to make inlays by the matrix method it didn't appeal to me at all, and I have made some that are still in the teeth of my patients that are an eyesore to me. We are not doing justice to the patient unless we reproduce in a wax model as nearly as possible the exact anatomical form that was there before that tooth was decayed. That inlay should be made in such a way that when the closure of the jaws with food between them bear down upon the inlay the food will be gripped and torn to pieces instead of being squeezed out from under it. Nature intended we should have sharp cusps and grooves, and those things should be reproduced in our inlay restorations upon occlusal surfaces. I have had the experience of sometimes carving those surfaces carefully and finding when the inlay was cast that the opposing tooth impinged too hard, and I have had to grind the grooves nearly all out, and I never liked that inlay afterwards.

Take the wax out after the patient has chewed upon it and you have carved it—and here is a little detail in the prepara-

tion of a wax model that I want to commend to you—I believe more time should be put upon the preparation of the wax model than is ordinarily given it in practice. I mean by that, that the more work you put on it the less work you have to put upon the gold inlay when it is cast. The finer polish we put upon the wax model the better casting we will have. After the wax is carved you can polish it by taking a little pellet of cotton in the pliers, saturating it with vaseline and wiping over it and down in these grooves, always in the direction of the cavity margin, and keeping at that, lessening the quantity of the vaseline, until you can put a beautiful brilliant polish upon the wax model. In removing this time you don't want to handle it after that with the fingers any more than you can help. Place an exploring instrument in the interproximal space and sink that in the wax just rootwise of the contact point and you can lift the wax out. Lift it out and seat it a few times so that you know it will go to place without any impingement. Then imbed the sprue wire at the contact point. I have had men advocate it in another place. I always like to imbed the sprue wire at the contact point. That is about midway between the gingival and occlusal, anyway between one extremity and the other extremity of the inlay. I imbed the sprue wire in the contact point and then it is placed in the cap. Now that wax model is the exact form and finish that you want the completed inlay.

(To be concluded.)

Dental Societies

B. C. DENTAL ASSOCIATION MET JUNE 4, 1918

Seventy-five British Columbia dentists met in their fourth annual convention at Hotel Vancouver, June 4th. The conference started with a meeting of the College of Dental Surgeons of British Columbia at 9 o'clock. It was followed by a series of fifteen progressive table clinics, which occupied the attention of the gathering until 1 o'clock, when luncheon was served. The afternoon programme included papers upon professional subjects by Drs. E. B. Edgars and F. W. Hergert, of Seattle, and Dr. J. E. Argue, of Tacoma. The business meeting occurred at 4 o'clock, when officers were elected and "oral health" moving picture films were shown. At 6.30 o'clock the annual dinner was given in the hotel blue room, at which addresses by Dr. W. E. Cummer, of the University of Toronto, and Lieut.-Col. H. T. Minogue, C.A.D.C., were heard. There were post-graduate courses in prosthetics by Prof. Crummer lasting through Wednesday and Thursday.

The progressive clinic upon a cursory glance had every appearance of a progressive whist party. Instead of dallying with playing cards, however, the assembled dentists at each table were absorbing the very latest and up-to-date dental matters. Slides, models, plaster casts and instruments were used freely in the demonstration, each table of the fifteen being presided over by an instructor recognized as a past-master in his professional art.

Scattered among the delegates were a number of dentists wearing the khaki, and enquiries regarding any possible honor roll elicited the information that of the total dentists in British Columbia no less than 25 per cent. were entitled to places upon the dental honor roll. Capt. Levy, of the C.A.D.C., who has returned and is now engaged at Shaughnessy Hospital, is the only active service dentist who has so far returned. With considerable and pardonable pride, one of the dentists supplying the information said that Major-General Clayton, head of the Dental Corps, sent word back to this Province that the British Columbia men in the corps were regarded as the best of the entire 600 men in the division, and had therefore been accorded the most responsible positions within the service.

Dr. Emery Jones, of New Westminster, is retiring president, while Drs. R. L. Coldwell and Lewis Hall, of Vancouver

and Victoria, respectively, are retiring vice-presidents. The offices of treasurer, secretary and supervisor of clinics were held respectively by Drs. George Telford, T. W. Snipes and W. F. Wright, all of Vancouver.

The following officers were elected: President, Dr. T. W. Snipes; 1st Vice-President, Dr. J. G. Smyth; 2nd Vice-President, Dr. F. W. Proctor; Secretary, Dr. W. S. Watson, Vancouver; Treasurer, Dr. Geo. Telford.

THOSE IN ATTENDANCE AT THE RECENT CONVENTION AT CALGARY

Dr. L. T. Allen, Lethbridge; Dr. G. T. Brebber, Stettler; Dr. J. S. Bricker, Coronation; Dr. W. P. Craig, Lethbridge; Dr. Carmichael, Edmonton; Dr. R. S. Decker, Edmonton; Dr. W. McL. Duncan, Didsbury; Dr. C. E. Eastwood, Edmonton; Dr. French, Edmonton; Dr. J. B. Gerry, Kamloops, B.C.; Dr. W. T. Haynes, Hardisty; Dr. J. S. Lowther, Edmonton; Dr. P. MacDonald, Medicine Hat; Dr. G. E. McKeage, Nanton; Dr. M. A. McIntyre, Edmonton; Dr. A. O. McPherson, Medicine Hat; Dr. E. L. McKee, Medicine Hat; Dr. W. F. Monkman, Vegreville; Dr. A. B. Mason, Edmonton; Dr. J. H. A. Moore, Lacombe; Dr. F. B. Miles, Cranbrook, B.C.; Dr. Milton Moore, Medicine Hat; Dr. F. S. Mercer, Edmonton; Dr. G. A. Pollard, Banff; Dr. C. A. Raver, Edmonton; Dr. Richardson, Edmonton; Dr. J. G. Roberts, Edmonton; Dr. W. R. Wilkinson, Edmonton.

Calgary men—Dr. A. D. Callum, Mr. A. R. B. Calder, Dr. Courcier, C.A.D.C.; Calgary Dental Laboratory (Mr. Austin); Dr. J. W. Clay, Dr. E. M. Doyle, Dr. H. L. Freeland, Dr. Gilchrist, Dr. A. E. Heacock, Dr. C. B. Johnson, Dr. A. E. Hennigar, Dr. R. M. Harvey, School Board offices; Dr. J. I. Kelly, Dr. V. H. MacAulay, Dr. A. E. Mertz, Dr. L. A. Maxwell, Northwest Dental Laboratory (F. Greatrix); Neal Dental Laboratory (Mr. Neal); Dr. W. H. Plaxton, Dr. W. A. Piper, Dr. G. R. Ross, Dr. H. G. Robb, Dr. H. W. Wright, Dr. E. H. Simmons, Dr. F. E. Sandercock, Lieut. W. W. Astle, C.A.D.C.; Lieut. McIntyre, C.A.D.C.; Capt. P. J. Healy, C.A.D.C.

The programme of the recent British Columbia meeting shows fifteen clinics on all the varied up-to-date subjects, besides a progressive clinic of great interest.

OFFICERS OF SASKATCHEWAN DENTAL ASSOCIATION

The following officers were elected at the dental convention which met in Moose Jaw last week: Honorary President, Dr. W. D. Cowan, Regina; President, Dr. F. K. Switzer, Saskatoon; First Vice-President, Dr. C. W. Sutherland, Saskatoon; Second Vice-President, Dr. W. C. Wilson, North Battleford; Secretary-Treasurer, Dr. W. H. Falloon, Saskatoon.

A resolution was passed at the business meeting of the association heartily endorsing the recommendations recently made by Dr. Foght to the Provincial Government with regard to the introduction into the school curriculum of this Province a more thorough course in physiology and hygiene, as well as those in regard to dental and medical inspection in the primary schools.

It was unanimously decided that the next meeting of the association be held at Saskatoon, and that, if at all possible, another course along some other specific line of work should be given.

WINTER EXODONTIA CLUB, NO. 1

The Exodontists of Minneapolis and St. Paul had their first formal meeting at the Minneapolis Athletic Club, May 19, 1918. The guest of honor was Dr. George B. Winter of St. Louis, the author of "Exodontia," and the originator of a new technique for the removal of impacted lower third molars. Dr. Winter demonstrated the efficiency of his system by removing a large number of impactions, at a clinic, the average time employed being less than one minute.

For recognition of his contributions to science, the club honored him by naming this, the first organization of its kind, for him.

HENRY B. CLARK, President,
CARL J. RICE, Secretary.

Editorial

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MANITOBA.—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA.—H. T. Minogue, D.D.S., L.D.S., Vancouver.

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TORONTO, JULY 15, 1918.

No. 7.

ETHICS FOR THE GOVERNORS OF DENTISTRY

There seems to be a lack of delicacy in many dentists where their own interests are concerned. Some no doubt fall into indelicate positions by accident or thoughtlessness, while others are unable to appreciate that anything is wrong in their action, because self-interest looms so big that it obliterates their finer instincts. Once a student said to the writer: "I have found a patient who will let me make a bridge for him." When told that the patient didn't need a bridge—in fact, it would be a detriment to him—the student was bewildered, and said: "I want to make a bridge, and the patient is willing that I should make one for him. Why should you object?" It was found impossible at that time to get the student to appreciate that it was wrong to make a bridge for a patient who didn't need it, even though the student should fail on his examination for the need of a patient for whom to make a bridge. So it is with some dentists who talk much of ethics and have power to sit in judgment of the ethics of others. They are unable to appreciate that there is anything wrong in this sitting on committees or official councils which recommend

their appointment to positions of trust or emolument. Some have honestly argued—one must give them credit for believing they were right—that their action was no different from what is done in municipal and legislative councils. To put forth such an argument is an evidence of sheer dishonesty; or a lack of appreciation of the indelicacy of such a position.

There are better days ahead in such matters, in both legislative and municipal councils. It has always been a rule that persons holding elective positions in the gift of the people should not directly or indirectly have financial dealings with the organization which they were elected to direct. This principle has been well understood for over a hundred years in British institutions. In fact, it is illegal in both legislative and company law. Made illegal, no doubt, because there were many who were willing to accept positions and the odium attached to their method of getting them for the sake of power or emolument, or both. For years this law has been circumvented in many ways. The usual method is for a member of a council, board, legislature or parliament to hold his elective position until arrangements are completed for his appointment, and then resign on the assurance that he would get the appointment. This makes the action legal, but none the less immoral. In dental organizations the member often hasn't the grace to resign, but boldly takes up the cudgels to justify the appointment. Some years ago the Laurier Government introduced civil service reform for internal affairs, leaving all appointments outside of the Parliament Buildings as before. When the Union Government took office the Civil Service Act was extended to all services. By this Act all appointments will be made by a commission; so in future elective members cannot evade the law by resigning after they are assured of an appointment. Isn't this the dawn of better things in Parliament? If in the rough-and-tumble of politics when the ethics of the members is the ethics of the average of the masses, such actions are reprehensible and illegal, surely among educated professional gentlemen it ought to be looked upon as improper for a member of a nominating committee to allow his name to go before a society for election. Once a member allows his name to stand on a nominating committee he should consider himself disqualified for any office for which the committee has power to make a nomination.

So many dentists have fallen into such indelicate positions one must think it is because of example or thoughtlessness, because one could hardly think that there are many who

cannot appreciate the immorality of it, or are so dishonest that they care not how they gain their ends. Once attention is called to such a matter it is enough to correct it in the vast majority of cases, and for the others nothing but exposure will work a cure. The unmoral will refrain, because others will tell them they shouldn't do it. The immoral will fear the consequence of public opinion. So in future we will publish the facts in such cases as come to our attention without comment, and leave the profession to judge of the action.

REPORT OF THE ANNUAL MEETING OF WOMEN'S AUXILIARY

Splendid Year's Work of the Women's Auxiliary of the Canadian Army Dental Corps, Military District No. 2.

At the annual meeting of the Women's Auxiliary of the Canadian Army Dental Corps, held at the Dental College, Tuesday, June 2, a most interesting and profitable summary of the year's work was given.

In well chosen words, Mrs. A. E. Webster, the retiring president, addressed the meeting, giving concise reasons for the existence of the auxiliary, stating its aims, and reviewing the work of the two years since its organization, and forecasting for it a future full of promise.

Mrs. Harold Clark, the secretary, reported 268 boxes, containing 17,590 articles, valued at about \$900, having been sent overseas, and provision made for boxes being sent with regularity throughout the summer months. Three hundred and twenty-seven pairs of socks were donated or knitted by the members for overseas. Many comforts and necessities were provided for the dental clinics of M.D. No. 2, and a fund set aside for some of their summer needs.

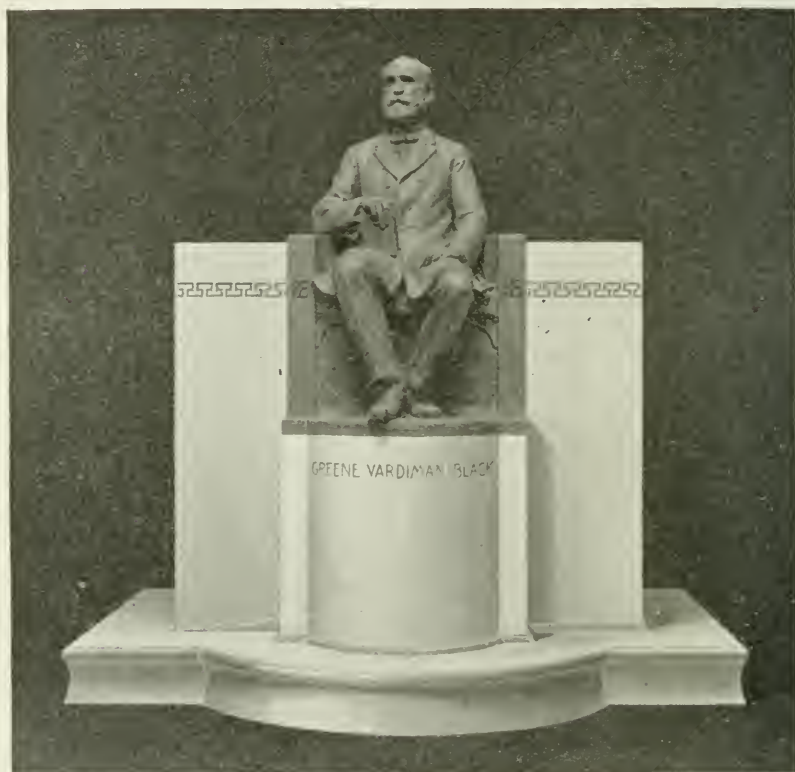
The treasurer, Mrs. A. J. McDonagh, reported a goodly total of \$1,377.24 received, of which \$982.54 had been raised during the year by various ways and means. Special mention was made of generous donations from the Canadian Oral Prophylactic Association, the T. Eaton Co., the Parks Commission, the Women's Liberal Association, and the Red Cross in aid of our work.

The election of officers for the ensuing year resulted as follows: President, Mrs. Harold Clark; First Vice-President, Mrs. Horace Eaton (by acclamation); Second Vice-President, Mrs. F. C. Husband; Third Vice-President, Mrs. Arnold

Mason; Recording Secretary, Mrs. J. A. Bothwell; Corresponding Secretary, Mrs. M. B. Gausby (by acclamation); Treasurer, Mrs. A. J. McDonagh (by acclamation).

Since the organization of this Women's Auxiliary (the first in Canada) several have been formed in Canada, the one in Hamilton working in co-ordination with us, and greatly facilitating the work done for our men at home and overseas. Several auxiliaries have been formed in the United States, based on the lines adopted by our Toronto auxiliary. The sum total of the year's work has been very encouraging, and is an inspiration for future endeavors.

The annual meeting of the Canadian Dental Association will be held in Chicago, August 5th to 9th.



Greene Vardiman Black Memorial.—A Memorial from The National Dental Association to be Dedicated at the 60th Anniversary Meeting to be held in Chicago, August 5-9, 1918.

Editorial Notes

Dr. Clark, of Minnedosa, has joined the C.A.D.C. in Manitoba.



Dr. Grant, of Moose Jaw, had the misfortune to lose his office equipment by fire.



There were 75 dentists at the meeting of the British Columbia Dental Association.



Lt.-Col. Hume will be home in time to take part in the national meeting in Chicago.



The dentists in the C.A.D.C. at Barriefield Camp have defeated all-comers at baseball.



British Columbia dentists are asking the Legislature to give dental assistance to the needy poor.



A Mr. Hill was fined one hundred dollars for practising dentistry without a license in Victoria, B.C.



Prof. W. C. Cummer, of the Royal College of Dental Surgeons, has joined the Canadian Army Dental Corps.



Capt. D. M. Boyd, Lieut. D. Young and Capt. C. H. Mackenzie have been recently appointed in Military District No. 10, of the C.A.D.C.



A cable has been received that Capts. Jackson, Brown, Carmichael, Mason and Thompson, of the C.A.D.C., have landed safely in England.



Dr. Cummer, who has been conducting courses in prosthetic dentistry throughout the Western Provinces of Canada for the past month, has returned.



The Michigan State Journal devoted its entire April issue to those men, women and children who have fallen into the grip of the great white plague—tuberculosis.

The New York "Herald" says that the girls who have recently graduated from the Columbia University as dental hygienists have offered their services to the United States army.



Dr. R. D. Thornton, professor of Dental anatomy in the Royal College of Dental Surgeons, has joined the Canadian Army Dental Corps, and is stationed at the Orthopedic Hospital, Toronto.



At a meeting of the profession in Toronto, a vote was taken on the advisability of the University of Toronto taking over the teaching of dentistry as a faculty, with the result of ten to one in favor of the university teaching the subject.



The Canadian Dental profession will be largely represented in Chicago at the national meeting, because there are so many dentists in Canada who have had long and continued association with the dental profession of Chicago. There are perhaps more dentists graduated from the Chicago Dental Schools and practising in Canada than from any other foreign city.



Canadian dentists who attend the National and Canadian meeting must not expect to see all the clinics, all the exhibits, attend all the sessions, hear all the papers, and absorb everything that happens. There will be such an abundance of material presented that no one person could see or take in more than ten per cent. of it. Careful plans should be made out for each day's procedure, so as not to waste time on things that are not of interest.



The examination papers of the D.D.C. examination have just come to hand. They are, on the whole, a very creditable set of papers. A candidate who can make a pass on all these is surely qualified to practice. We note some very familiar questions. One or two papers look as if they had been selected from sets of questions of former examinations. A paper headed "Materia Medica and Therapeutics" asks for the etiology of pyorrhea, the causes of empyema of the antrum, the signs of syphilis. By what arrangement do these questions appear under the above heading.

At a recent meeting of the British Dental Association the work and the organization of the C.A.D.C. was brought into great prominence. It was pointed out that there were one-half as many dentists employed in the C.A.D.C. as in the whole English army of millions. The Independent Corps and the method of organization were highly recommended to the British authorities as a model from which they might well copy. It was pointed out that their methods were being used in other parts of the army. Much newspaper publicity in this regard has been done in Canada. The more that is known of the work of a dentist in the Canadian army, so much the better for the army, the people and the profession.



The publishers of "l'Autorite," a weekly paper of Montreal, have appealed against the judgment rendered by Mr. Justice Guerin, on December 20 last, when damages were apportioned by the court for libel: \$1,000 to J. H. Fortin, who was held to have been more directly aimed at by the article complained of, and \$500 to each of ten fellow-directors of the Governing Board of the college, namely: J. Ibbotson, J. S. Dohan, G. H. Kent, P. Hamel, A. C. Jack, G. H. Lemieux, J. G. Gardner, J. C. St. Pierre, Louis de Guise and Eudore Dubeau.



The profession in District No. 5, in the Province of Ontario, represented by Dr. W. M. Macguire, who is now the president of the board, held a meeting in Simcoe on June 19th, to discuss such matters concerning the profession as might properly go before it. There was a large representation from the district, as well as 15 or more members from outside points. The subjects under discussion were: "Dentists in the Army," "Finances of the Dental College," "The Teaching of Dentistry at the University of Toronto," "Conditions as Found by Dentists in Germany Since the War." Besides these discussions, which were of undoubted value, prominence was given to the social side of the meeting at the Golf and Country Club, which has a magnificent room for the purpose. Dinner was served at the hotel and tea on the lawn. There were games of golf and bowling. Those present were indebted to Dr. Macguire and his constituents for a profitable and enjoyable day. No small feature of the day's proceedings was the presence of a number of ladies, who served tea and helped in every way to make the day interesting and profitable.

Obituary

RICHARD NIMMO

One more of the pioneers of dentistry, in the person of Richard Nimmo, passed to his reward on June 19th, 1918.

Mr. Nimmo was born in South Monaghan, Peterboro' County, in 1847. After a public and high school training, obtained in his own county and Port Hope, he entered the study of dentistry, and graduated from the R.C.D.S. about 1870. He began practice in the then town of Peterboro', where he enjoyed a large and successful practice until about ten years ago, when his health failed and he was forced to retire. He was a gentleman highly esteemed, faithful in his public and private duties. In his younger days he was active in society work, and always took a deep interest in the work of St. John's Anglican Church, of which he was a member. He leaves to mourn his loss his faithful wife and two daughters.

DR. ALEXANDER A. MACKENZIE

Dr. Alexander A. Mackenzie, reeve of Tottenham, passed away on Tuesday, 21st May, after several months' illness. He was a graduate of the R.C.D.S. of the class of 1894, and had practiced in Tottenham for the last five years. Previous to that he had been practising in Stratford. He was a man of sterling character, who did his duty fearlessly, regardless of the applause or criticism of the public. He was active in church work, and took a live interest in all municipal and public affairs. He was reeve of Tottenham, and in that position won the respect and confidence of all. In the practice of his profession he was conscientious and careful in his methods, and always considered the welfare of his patients first. He was an enthusiastic member of the Masonic Order, and was buried with Masonic honors at Alliston. He is mourned by a wife, formerly Miss Connell, of Alliston.

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THE BUSINESS MANAGEMENT OF AN OFFICE PRACTICE, WITH SPECIAL REFERENCE TO ITS ETHICAL ASPECTS

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Delivered before the Ontario Dental Society, May, 1918.

The reason this subject has been given me probably is that in the recent past, at least for some years there has been on our side of the line, whether on this or not I do not know, an unhealthy tendency towards commercialism in the practice of dentistry. Quite an agitation was started some years ago to introduce business methods into dentistry, and that was carried to so great an extreme that it became an offence to the ethical and professional members of our calling. Now, the reason that that took such a hold upon the profession was likely this—and it was a very natural reason—that the spectacle had been presented to the members of our profession of many men who had attained age, and probably honor, in the practice of dentistry, but who had reached their old age minus the competence which every old man should have, and we were presented, particularly, I know, in Chicago, with men of advanced age who had no means of support, and were obliged in their latter days to subsist chiefly on charity. That was a spectacle that went to the hearts of every thinking man in the practice of dentistry, and for that reason the agitation in favor of better business methods in dentistry took deep hold upon the minds of the members of the profession. But as I have just said, that was carried to so great an extreme that it became an offence.

To-day I want to try if I can to point out to you some of the distinctions between a professional life and a strictly commercial life, and then I want to try, if I may, to suggest some means by which even a professional man may so conduct his

affairs that he will come down to his old age with such a competence that he will not be subjected to the bitterness of accepting charity.

The difference between a profession and a trade, or a business, or any commercial pursuit, is this: that the professional man is dealing with matters of which the public are ignorant to all practical purposes. If a customer steps up to the counter of a store and asks for some calico, or some article of produce or any commodity of that kind, that individual has some idea of the quality of the goods he is buying—he has an opportunity to have some idea. If a patient takes your chair and accepts your service, that patient is not well informed upon the character of the services that you are rendering, and so there is that moral obligation on the part of the professional man that does not obtain in the ordinary pursuits of business. In other words, it is just the difference between dealing with persons and dealing with things, and there is a higher moral obligation in dealing with persons than there is in dealing with things. We as a profession should never be caught, individually or collectively, imposing upon the public, on account of the fact that they are not well informed about the character of service we are rendering them. We should apply ourselves in the light of teachers, as well as practitioners, and we should inform the public as they take our chair to the best of our ability of the significance of the value of dental operations; but even then they must take much for granted when they accept our services, and that is a moral obligation, an obligation that should never for one moment be out of the mind of any practitioner of any profession, whether medicine, dentistry, the ministry, law, or anything else.

And yet there is no reason why a professional man should so conduct his affairs that he may not have a competence to live upon in his old age. Dentists have been remiss in this. They have not had good business judgment. I don't mean by that that we should practice our profession for the dollar. I do mean that the professional man is called upon to make financial sacrifices for the relief of pain frequently. I think we as a profession should copy to a large extent the beneficence that has been meted out by the medical profession to the people. We have not been long enough a profession to get that humanitarian aspect of the medical profession or the ministry. We must cultivate that, and I do not mean when I say that a man should pay some attention to his business methods that he must think only of the dollar as he seats

a patient in the chair; he should think of something else; and yet there is a happy combination of business sense and professional etiquette and ethics that I think we all may follow very profitably, and it is to that consideration I want to call your attention this afternoon.

The first question, probably, to consider is that of fees. That is the question of all others that looms up in the mind of every beginner in the practice of dentistry, I believe. There can be no one set standard of fees. I am often asked the question, Do you charge by the hour or by the operation? That is an important question. I do not believe that the greatest degree of equity can be attained in the following of either one of those methods to the exclusion of the other. In other words, I do not believe in charging so much for an amalgam filling all the time; neither do I believe in charging so much for a gold foil filling. I think there should be a minimum and a maximum. I do not believe that would apply well to inlays or to any other work we perform. So that I do not think that charging for the operation is always altogether equitable. We must charge more for one filling than we do for another, principally because it takes more time and more skill. Neither do I believe that it is a correct method to charge solely by the hour, and there are many reasons for that. If I were pinned down to charging so much per hour I would have to watch the clock too closely. I am not a trade unionist. I am not a good eight-hour-a-day man. If I were compelled to limit my services to eight hours a day I would be unhappy. I don't want to watch that clock, and I don't want to have the patient watching that clock either. That reminds me of a story of a good friend of mine in Chicago. He was supposed to charge \$25 an hour. Remember, I said "supposed." He had a patient in the chair one day, and this patient was a man who sometimes played poker, and the dentist knew that, and the dentist thought he would curry favor with him, and he said: "By the way, I want to tell you about a poker game we had down at the club the other night." And he started in to tell him. The patient said: "Doctor, I am paying you \$25 an hour. I will come some other time and take a half day off and listen to the story of that poker game, but I want my tooth filled today." The patient does watch the clock. I don't believe that it is equitable to charge solely by the hour, for the reason that there is not an operator in this room who can render the same character of service hour after hour and keep it up all the time. You are delivering better service per hour some days

than you are other days. There is no question about that. You can't accomplish as much during some hours for the welfare of the patient as you can others. So I believe that while **neither of these** methods is correct when practised alone, we should take into consideration both methods and make a combination of the two.

This question of fees is not such a bugbear as it appears to be to many in the practice of dentistry. The thing to do in the first place is to learn to deliver good service, to deliver that service, and then have the courage to ask for the fee for that service, as if you were entitled to it, and not in an apologetic way—not even in your demeanor. I remember a remark I heard the other day about a medical practitioner of the city of Philadelphia. Somebody said: "Why was it that man had such success?" Another man said: "Because he had the faculty of looking a patient straight in the face and saying, '\$15, please!'" You must have the conviction behind your own soul that you are delivering good service or you can't look your patient in the face and demand good fees. If you do deliver that service and establish a reputation in your neighborhood for being absolutely honest this fee problem will settle itself. The great mistake we have all made is that we have not estimated our services as high as we are entitled to estimate them. Probably some of us have asked as much as the work was worth, but at the same time we have not estimated our service as high as that service was of benefit to the **individual**.

Now, I am not in favor of charging enormous fees, but I tell you, Mr. President, I have the conviction that there is no other class of service that is handed out to the public that is worth as much, dollar for dollar, as properly performed dental service. I admire the medical profession, and I respect them and sympathize with them in many of the complications of their practice, but it is a matter of record that you may consult a medical man and accept his services and be no better than you were when you went to consult him—sometimes you may be worse. You may consult a lawyer, even a conscientious lawyer, and accept his services and be worse off than you were before you accepted him. That, I think, is not without the range of possibility. But no individual can seat himself in the chair of a conscientious dentist without receiving benefit thereby. It is a more definite service to humanity than any other that I know of, and by the same token, it requires a higher order of service and skill and efficiency to practice dentistry

to its highest attainment than it does to practice any other profession. A man must have the instincts of the scientist to practice dentistry properly. He must have the intuition of the diagnostician; he must have the taste of the artist; he must be a mechanic; he must be all these, and then he must be a perfect gentleman. That is a rare combination. There is nothing that you can pay for that kind of service in dollars and cents that will be adequate, and I think the profession has not been paid as much as it is entitled to. That is our fault, rather than the fault of the public, because it is all a matter of education; and I want to say for the encouragement of the profession that there never was a time in the history of our profession when dental service was as well rewarded and as willingly rewarded, as it is to-day. The responsibility is thrown upon you and me when the public has come forward and expressed its willingness to pay for dental service that we make good with the service we render. I look upon this as one of the most critical times in the history of our profession. The recognition we have been given by the Government not only of this country, but the United States, where by legislation the dental profession was placed on an equal rank in the army with the medical profession—all of these, while they are honors to us, and we appreciate them, throw upon us an added responsibility that we shall make good in the eyes of the Government, and in the eyes of the community, and that is the thing I am most in fear of. We hear a great deal more about the honors that come to us than about the responsibility that is thrown upon us, and it is the responsibility that we are facing to-day that is significant in connection with recent legislation.

The size of the fee will be regulated somewhat by the community in which the practitioner is located. That brings up the question of collections, and that is another bugbear with professional men. That is a matter that is somewhat regulated by the community also; but let me tell you that collections will be more easily solved if we get in the habit of rendering our accounts oftener and more regularly and promptly. There should be an understanding with our patients in almost any community that an account should be rendered monthly.

I am not going to tell you anything about how to collect those accounts in case you have difficulty. I am going to make this one suggestion in that connection: that I believe honest reasoning and meeting the other fellow from the other fellow's point of view, as well as our own, will accomplish a

great deal more in regulating these matters than it will to go into court and sue. I am not in favor ordinarily of a professional man (there are exceptions to every rule) making it a practice of suing his patient. In the first place you very seldom get justice, because the average lawyer on the other side will make a laughing stock of you, and, unfortunately, the newspapers are more prone to pick up the things that make a laughing stock of you, and publish them in large headlines, than to give the actual facts and the ethical aspect of the case, and I believe ordinarily the profession is discredited when they go into court, and the newspaper reporters get after them. I don't believe ordinarily in suing for a bill. If the patient can't afford to pay—sometimes they can't—we should forget it. Remember this also, if you lose a bill don't worry over it. God knows you made it out of the air in the first place, and the air is still here. When you get a bill that you can't collect, forget it; you will be happier. You may not make the debtor so uncomfortable, but you will be happier yourself.

Now, I come to the last consideration in this connection, and I think it is one of the most important, and that is the matter of investments for dentists. I spoke a few minutes ago about the conscientious lawyer. I now speak about investments for dentists; but remember there is not so great an incongruity after all, because dentists do have something to invest. I am going to speak particularly this afternoon of the character of investments the average professional man should consider. I don't know what your experience is in this country, in this city, or in the towns of Ontario, but I do know on our side of the line there is one individual who has fattened upon the credulity of professional men, and that is the promoter. That word "promoter" takes in a lot of people of different kinds, and there is a current opinion among these people that the professional man is an easy mark. I want to give you one illustration of that: In the city of Chicago there was a firm just starting in the brokerage business. There is a great distinction between brokers—some brokers are perfectly honest, and there are some who are not—and these brokers offered a friend of mine in the dental profession a free partnership—there were to be three of them—if he would go into that simply because of the influence he could use among his dental friends to put money into that enterprise. I think that was the worst reflection on dentistry I have ever heard. I want to pay him the tribute to say that he turned that proposi-

tion down, but it shows which way the wind blows. This promoter may appear to you in various guises; he may have some mining stock; he can show you by all kinds of figures that the greatest fortunes have been made in mining stocks; he can show you, if he has an oil proposition, that immense fortunes are being made to-day in oil. If it is a Mexican plantation, he can prove by figures how many fortunes have been made, and how easy it is to just sit in your office and pull in the dividends. They have an enormous percentage of profits figured out on paper. Now, their plan for getting at you is as ingenious as anything in human nature. Very many times they will get a personal friend of yours interested in an enterprise, and they will come into your office with the name of that friend, and you may know that friend to be a perfectly honest man. Sometimes two of them will come into the office together. There is a psychology in that, you know; if two of them can't land you, you are made of pretty good stuff; but they will come in with all sorts of schemes; and I want to tell you now that dentists have worked hard at the chair frequently to pour money into the pockets of promoters of that type, and the time has come when the dental profession should make up its mind that it is not going to work as hard as it does and give money into things of that kind. I had a prominent business man say to me a short time ago: "I have sometimes missed opportunities of making lots of money by going into these schemes, but when I estimate all of the schemes that have come to me, and have noted the few in which I would have been successful, and compared them with the myriads of them in which I would have lost money, I am very many dollars ahead to-day because I never went into any of them."

Remember this, that if there is any scheme that is legitimate, and that promises a big percentage in return, capital is waiting all over this country and the United States to go into that kind of scheme; and they don't come to a dentist or medical man to get money for it. They don't have to. They don't have to canvass. Capital is lying all over looking for that kind of opportunity; and don't you flatter yourself for one moment that your judgment is better than that of the financiers who have built up fortune after fortune. Keep out of that kind of thing. Sometimes it is very embarrassing to keep out of them when your friend's name is mentioned to you, but I am going to give you a suggestion as to how you may do it, and you can do it graciously, and you won't hurt anybody's feelings. I will give you an illustration in my

own case. One time I sold a piece of property in Chicago, and the transfer came out in the paper; and the next morning my phone bell rang many times to make me wealthy; and one of my neighbors, a royally good fellow, called me up. I said to him: "I have a friend of mine who is a business man, with whom I place all my investments. I have nothing whatever to do with selecting the investments I make." He said: "Would you give me his name?" I said: "Not on your life. If I dictated to him one minute what character of investment he should make for me he wouldn't make any more. If he came to me and dictated to me about the character of dental service I rendered I wouldn't want him as a patient." No professional man has any right to make an investment for himself without consultation with a business man. Supposing a banker in your town had the toothache, and would attempt to cure it himself, or fill that tooth, what respect would you have for his judgment?

When it comes to a matter of business he is just as much a specialist in business as you are in dentistry. If you want to make an investment it is just as logical to consult him and get his business knowledge as it is for him to consult you when there is something wrong with his teeth. You will safeguard your interest by consulting some practical business man in your town who has integrity, and who has a grasp of the situation, and take his advice about your investment.

There are certain kinds of investments which I think are suitable for professional men. In the first place, I am absolutely opposed to buying on margin on the Stock Exchange, or on the Board of Trade. Speculating of any kind does not fit in well with professional life. If you are going to speculate, for goodness sake get out of the profession first and then speculate, but don't try to practice dentistry and speculate. You can't put in beautiful gold foil fillings when you are watching the ticker. You can't keep your mind on your work when that ticker is jumping up and down, meaning hundreds of dollars to you every time it jumps. You can't keep your mind on your work if you are watching the stock returns, and so I am going to advise you not to speculate at all. Remember you were never born to get rich quick, and the sooner you learn that the better it is for you. You see examples of men who have had immense successes, and you don't see any reason why you can't; and if you go on to the Stock Exchange and speculate and make a few hundred dollars, that is the worst thing that ever could happen to you; that is a most

dangerous thing. I remember a man coming to me one day (I had written a book on this), and he said: "I was just talking to a man down in the Southern States who said he lost \$64 by reading your book." I said: "How did it happen?" He said: "You advised him not to speculate on the Stock Exchange, or to buy on the Board of Trade, on margin, and he said he was advised by a friend of his to buy wheat, and he refused because you advised against it in your book, and if he had bought he would have made \$64." I said: "You take this word back to him, that just as surely as he made \$64 he would have lost six times \$64 before he got through."

You can't convince any man who makes a little money that he can't go in and make a great deal more; and if men who have studied this proposition all their lives will frequently, time after time, go down in defeat and failure, what kind of a chance do you think you will have to play that kind of game and win out? The professional man does not win, but there are many professional men who have lost their hard earnings in speculation of this kind, and I want to urge against it.

Now, there are investments that I believe are perfectly legitimate. If you want to have a little sport going through life buy stocks if you want to, but buy them outright, and put the certificates in your safety deposit vault, and forget you have them so far as the market is concerned. If they are good dividend-paying stocks you get your dividend; if they are safe your security is safe. There is absolutely nothing that I know of that is secure in this world. Provided you buy those stocks when everybody else is scared into selling them, thinking the country is going to the dogs—this country won't go there, and the United States won't go there—so if you buy when everybody else is frightened and selling, then there may come a time when everybody else thinks everything is going to be secure and rising high, and they're getting crazy and paying more than stocks are worth—then sell if you want to. But never buy on margin, because that stock is liable to jump the wrong way; and if you buy certificates outright, put them away. If the stock goes down you get your dividend anyway, and you don't have to watch the market, and some day it may come back; but if you have bought on margin it may some day wipe you out. I know friends who have bought, who thought they knew more about it than the brokers and bankers, and they have lost. You don't hear of those things, because they are ashamed to tell them. If a man makes fifty dollars, or one hundred dollars, or a thousand dollars, all of his friends know

about it, but if he loses that much money he keeps it quiet; and too many have lost money in things of that kind, and have kept it quiet.

There is another form of investment I am very partial to, but I should want to know something of the character of the property. I refer to mortgages, but if I were buying them I should want them in a region about which I knew something. First mortgages on real estate, I believe, are a good investment for dentists. I should never, however, buy first mortgages on any piece of property without taking the advice of my banker or my broker whom I knew to be honest. He knows more about the circumstances of that property than I can ever learn, and I will take his advice. But the best investment I know of for dentists, the most satisfactory investment, is bonds. In this also I should want the advice of expert bond men. I want to acknowledge at the outset that investment in bonds is not an exciting sort of proposition, and there is not so much fascination about it. There is not so much sport about it as in other investments, and you know there is a certain amount of sport in every one of us. It is a kind of commonplace transaction, but I want to tell you, if you buy good bonds and then cut your coupons from those bonds and never use those, but reinvest them; never use the income that comes from any of your investments any more than if it didn't belong to you—and as a matter of fact it doesn't belong to you; it belongs to your family or to those dependent upon you—if you just take the coupons that come from those bonds, there is less detail about it, there is less red tape about it, there is less trouble about it than anything I know of in the way of property for a professional man. Take those and re-invest them in other bonds, and it is not very long before the income from those bonds will be climbing up, and the accumulation from that sort of investment is the most astonishing thing I ever had figured out for me.

While there is no excitement in that, there is a great deal of security; and I am going to urge the members of this society to think very seriously in their investments of considering the purchase of good bonds. There is a possibility of making something on some of these bonds; for instance, at a time like this, when bonds are low. You can buy them very low, good, reliable, safe bonds. I don't believe in buying everybody's bonds. I mean doing it in a perfectly business-like way on the advice of men who know something of the situation. But in the end, take two men starting out in the

profession, two men of equal ability; let one of them begin to speculate or invest in a promotion, or in any of these things that are such temptations to us, and let the other man simply buy bonds and re-invest his income from the bonds, adding to them as he can little by little, and at the end of ten years the man who has bought bonds and kept them will be in an infinitely better position than the man who has speculated. You may know friends in the profession who have made money in speculation, but if you show me one man that has made money by speculation, I can show you hundreds that have lost all of their earnings that way.

Now, Mr. President, I am forced to get a train before very long, and so I shall be obliged to stop, unless there are some questions to ask. If there are any I would be glad to answer them if I can.

DISCUSSION.

Question: What about life insurance as an investment?

DR. JOHNSON: The first investment that any professional man should make is in a home for his family. There is nothing in the world that will anchor him so perfectly to the community as a home; there is nothing that will make him save and pay for so willingly as a home. Now, they will tell you this story—I have been told it myself, and it may be true in figures—that it is cheaper to rent than to own your own home, and particularly now, when taxes are so high; but for goodness sake don't complain about taxes. Let us put our hand in our pocket and pay to the last dollar to keep this Government, or any Government that is engaged in this great war. They can take taxes and insurance, and all that sort of thing, and figure out to you perfectly how much cheaper it is to rent than to buy your own home. But home has an ethical value to a man that makes him more an integral part of society than renting, and every professional man I have ever known, with few exceptions, who has attained a competence at all, has first of all owned his own home. That is the first investment I would advise anybody to make, with one possible exception, and that is to invest in a wife. After that, if you have got the wife and the home, you want to invest in life insurance. I am thankful to the gentleman for bringing that matter up. I am going to make this suggestion, however, that you make an investment in life insurance of a character which will not compel you to pay out on that insurance all your life, and then have to die to win. I want you to invest in life insurance by which you can get a paid-up policy in a

reasonable number of years. Make those payments at a time in your life when you have "zip" and "pep." I don't know whether you know what that word means over here, but meet those payments at a time in life when you have the energy to work, and not be placed in the position of the old man who has to struggle to pay life insurance at a time when he has lost his energy and cannot make the payments. Make no longer than a twenty-year payment policy. Meantime your family is protected, and that is the first obligation of every man. At the end of twenty years, if you are going to have any sense about investments at all, you have got it then, and it is a mighty nice thing to have a policy coming in to you at such a time. I will give you a personal experience. Years ago, when money didn't come so very easily, I took out a ten-thousand-dollar twenty-year payment endowment. There were times when it was hard to pay that, but it was paid, and it got easier to pay it after a while; but the easiest thing in that transaction was when they turned over to me twelve thousand five hundred and some odd dollars. That is the kind of life insurance I believe in. You need to protect your family first, and you can do it in that way and still have an investment to be turned over to you when you grow old.

DR. McLAUGHLIN: You started out by giving one distinction between the professional man and the business calling. Perhaps I am asking what I ought not to ask, but there comes a time in your lectures to your students when you want to give them a short definition distinguishing between profession and business. Would you mind giving us that?

DR. JOHNSON: I can do that in very few words. We use the term ethics in the profession frequently, do we not? I am a firm believer in ethics, and I want to define in a few words what I believe to be meant by ethics. Ethics is the science of morals. To be an ethical man in the practice of dentistry you must obey the Golden Rule, and that is the hardest thing for every one of us to learn, but I want to tell you unless we learn to do that one thing and obey the Golden Rule we are not fully developed as professional men. As I said a moment ago, there is the distinction between professional life and business life that in one case we are dealing with persons, and in the other with things, and it is a more serious matter dealing with persons than it is dealing with things. A mistake on your part, or a mistake on the part of the medical man, may cost human life. You may fleece a man in law and take his money away from him, but you have left

his life. You may skin him in a horse trade, but he is not dead. That is the difference. You are dealing with human life and human welfare in a very different way in the practice of a profession from what you are in a business transaction.

Now, Mr. President, I want to express again my keen appreciation to the members of this society for the privilege of meeting with them. It is always a very great pleasure for me to come to this city and to this province—to come to any place in Canada. To my friends, Dr. and Mrs. Hartley, on the way over here—we came from Chicago together—I said there is a little different feeling coming into this country from going into any other country on the face of the earth. It is coming back home. Some of the hillsides may have gravel on them, some of the valleys may not be as rich as other valleys that we see, but every hillside and every valley is particularly dear to me.

At this particular time I am especially pleased to come back to you. I said to my friends in Chicago: I am glad I am going to Toronto, because I want to get some of the spirit they have there. During the last month or so I have been so depressed over that condition on the western front that my life has been miserable. The appalling enormity of the calamity of any possible gain by the Germans has plunged me into the depths of despond, and I want to say to you I have not had the supreme and magnificent courage that you men display over here. Last night I had the pleasure of sitting at the table at a little dinner party, and all through that evening there was no mention of the war at all. Thank God there is a spirit here I wish I could take back to America when I go back, and I am going to do the best I can to take it back. This war has seemed so cruel to me, and so real, because I was in Europe when it broke out, and it has left such an indelible impression on me that it has penetrated every part and fibre of my being ever since the war began; and I have had this feeling, ladies and gentlemen, that with all of the ideals that I had built up in my mind before 1914, with those ideals of what I believed we had attained to as a civilization swept out from under me, I have said many times that I wished I had died before 1914. The realization that I had been so terribly mistaken about our civilization has been the cruelest blow I have ever had; but I feel differently to-day. I said to an audience in Chicago the other night that there are more gray hairs than anything else on my head, and I am stooped from years of work, but rather 'than see Germany win I

would go on my knees to my Government and beg them to take me over and do with me what they wished. (Applause.) And I am under the conviction that if my Government would accept me, old as I am, and stooped as I am, I would take my chances against any Prussian guardsman that ever trod the earth. (Applause.)

Now, while I have wished that I had died before 1914, I have got to the point now where I hope to be vouchsafed the privilege of living long enough to see that Prussian militarism buried deep beneath the sod, and erected over it this epitaph: "Rest in a permanent peace." (Prolonged applause.)

DR. COYNE: Mr. President, I move that we extend to Dr. Johnson the hearty vote of thanks of this association for his kindness in coming here, and also for that zip and pep he spoke about that he has exhibited in his few closing remarks. I am sure the members of the Ontario Dental Society always look forward with marked pleasure, and with a great deal of interest to hearing Dr. Johnson.

I was glad he expressed himself as he did about the gold foil filling. It is nice to agree with a man as prominent as Dr. Johnson is. It makes me feel big. I am a personal friend of the old gold foil filling, and I am going back very much more at ease since I have heard his expression. I am sure we have all profited very much, if there was nothing else, by hearing Dr. Johnson's lectures.

The president put the motion, which was seconded in many places, and carried with applause.

DR. JOHNSON: Mr. President and gentlemen, I want to express my keen appreciation, and say that the thanks should go the other way. I consider it an honor and pleasure to be invited to come over here and meet you.

One thing I did forget when I was on the floor was this: I was commissioned by the President of the National Dental Association, Col. W. H. G. Logan, who called me up an hour or two before I came here. He had reached Chicago from Washington, where he is now stationed, and I am commissioned by him to extend to you, the members of this society, and the members of the Canadian Dental Association, the most cordial welcome to Chicago in August, when you are to come there as the guests of the National Dental Association. One of the best evenings of the whole meeting is to be given to the Canadian Dental Association, and he commissioned me to extend to you all a very hearty and cordial welcome to

come to Chicago at that time and meet with us. I shall personally, as a former Canadian, be very much gratified to see a large delegation come from Canada to Chicago at that time. Remember the latch strings will be out in that city, and I am going to promise you one other thing, too. Some men have said something to me, in speaking about meeting in Chicago in August, which implied that there might be a hot spell at that time. Don't you believe it. I suffered more with the heat in Toronto in the summer than I have in Chicago. We have a summer resort there. Don't be afraid of the heat, and in any event I have a little influence with the administration, and I will work for cool weather. (Applause.)

GOLD INLAYS

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Delivered before the Ontario Dental Society, May, 1918.

(Concluded from July issue)

Next we come to the investment. That wax model would not invest well if you left it in the condition it is now. It must be clean. It may have saliva on it, it may have some of this vaseline or foreign materials on it. Clean it very carefully with a camel's hair brush and alcohol or acetone. I have used alcohol mostly, but acetone has been recommended recently as a more perfect cleanser than alcohol. My assistant is now using it. That inlay is gone over carefully with a camel's hair brush in all the interstices and carefully cleaned with acetone.

As to the investment, as I told you before I was not going to tell you what particular make to use, but I am going to tell you some of the properties I believe it should have. I certainly believe this, that with every mix the investment material and the water should be weighed carefully and the correct proportions used in every instance. There are scales for that purpose, and it is a simple thing to do. There is an exactness about it that you can't get by any other method. I want an investment of the consistency that will pour into the mold almost in a fluid condition, that will then harden and that will not shrink. There are investments of that kind on the market. In mixing the investment remember every step is important. This investment should be carefully mixed so that as few air bubbles occur in it as possible. To that end a rubber bowl should be used, the proper proportions of liquid and powder should be placed in the bowl, and with a spatula it should be

wiped back and forth over the surface of the bowl, and after it is thoroughly mixed in that way the bowl should be tilted edgewise and gradually tapped on the table as the bowl is being revolved, letting this spread the investment to cover the large surface of the bowl. By doing that you are jarring all of the little air bubbles from the investment. After that is done for a considerable time till you are sure all of the air bubbles have been jarred out, then take a little of the investment upon a camel's hair brush and paint the inlay carefully into every interstice and angle, cover it carefully, without any air bubbles getting in. Cover it up with the camel's hair brush first, then put the cap on and pour the investment down one side of the inlay so that it will cover the bottom, and go up under the inlay and cover it and then pour the flask full. If you invest in that way you will not have air bubbles in connection with the model. The proper kind of investment requires some time to set; it should be left absolutely quiet for at least twenty minutes. This process should be carried on consecutively after you start to invest; you should time yourself, and it should be carried on consecutively until the wax is burned out of the mold. At the end of about twenty minutes it should be placed on the fire, but it should not come in contact with the flame. A metal screen or something of that kind should be used on which to place the mold, and this put over a Bunsen burner and the heat gradually applied. You should not have a sufficient amount of heat to make the wax bubble out of the sprue hole, but it should be driven off in vapor and into the investment. The length of time that is required will depend entirely upon the degree of heat. The wax should be entirely fused out of that mold so that you have a clean mold. Now, up to this point that process should be carried on consecutively, but when the wax is once burned out you may place that mold to one side and leave it for days if you wish and then cast it.

Then comes the question of casting on a hot or cold mold. I am in some confusion about that. Dr. Taggart, who has standardized the making of the cast gold inlay more perfectly than anybody, suggests casting in a cold mold. I have not been able to see very much difference. I have seen some of the most beautiful work cast in a hot mold. But my great respect for Dr. Taggart's judgment leads me to ordinarily cast in a cold mold.

As to the carat of gold we are using, Dr. Taggart has suggested that the very best inlay can be cast from perfectly pure

gold, and that we will get ordinarily a more uniform result than with any of the alloys of gold. I for a time used pure gold in my casting. Those inlays fit the cavity well, but the pure gold when cast is too soft, and it will scratch up after a time, and the finish of the inlay to me is not satisfactory. That is, it will protect the margins of the cavity perfectly, it will save the teeth, but I don't like the looks of the surface of a pure gold cast inlay after it has been in for a time. I have recently been using 22k. gold, as I expect most of you have. I think we can get a very accurate fit with that, and it will be slightly harder and we get a better wearing surface, and so I have used 22k. gold more than any other for the casting of gold inlays.

Now I want to refer in this connection to a statement that was brought out yesterday, and that is this, that I do not believe that a 22k. gold inlay in many of those cases where there is much proximal wear upon inlays will give us a sufficiently hard contact point to stand up for many years under stress, and so in those cases where I am in any doubt I grind off that contact point and flow 18k. gold solder over it and make it into a rounded eminence.

The question might arise if pure gold foil fillings will stand up under wear, why will not cast gold, which is supposed to be of higher specific gravity than most of the gold foil fillings? It is this, a malleted gold foil filling will be harder than a cast pure gold inlay. I don't mean it will be denser, I don't mean the specific gravity will be greater, but the wearing surface will be more satisfactory from a malleted gold foil filling than from a cast gold inlay of pure gold. You can harden the surface of gold away beyond the point at which you have reached density, at which you have got high specific gravity. You are all familiar with the phenomenon that is presented in the swedging of gold plate, you swedge it and it stiffens up and you have to anneal it again in order to get an accurate fit upon your die, and when you mallet gold foil you can harden the contact point, or the whole surface of the filling even after you have secured the greatest degree of density. So that the wearing properties of well condensed and well hardened gold foil fillings are better than those of a cast gold inlay. I don't mean by this that the large majority of gold fillings that we insert have higher specific gravity or will wear better than the cast gold inlay. I simply say it is possible to do that with gold foil. I had the pleasure of inserting a gold foil filling in a test case at one time before the Illinois State Dental Society

that had a specific gravity of 19.27. I don't know of any malleted gold fillings, and the late Dr. G. V. Black said he never had known of one having that before. If we have a gold foil filling that has a specific gravity of 17 or 18, we are going to have one that will stand up pretty well under the ordinary stress of mastication. We can take a filling of that kind and harden the surface by malleting it, and we can harden it quickly by using a light, hard mallet and very much more effectively than with a heavy, soft mallet.

I make that distinction because I don't want the profession to have the idea that I think the average gold filling will wear better than the average gold inlay. I don't think it will.

Now, I want to say just a few words about the finishing and cementing of the gold inlay in place. If we have prepared our wax model very carefully, the finishing of the inlay is not a difficult process, and yet there was never in my mind, with the most careful preparation of a wax model and the most careful casting, any inlay that ever came from the mold that was not improved afterwards by a rotary instrument in the engine. So this inlay should be very carefully disked down to the margins before we cement it to place. Then it should be seated in the cavity. The contact point should be left a little prominent so that when we are driving the inlay to place it will exert a pressure latterly against the tooth next in line in the arch, and so that when we drive it it will go to place with a snap. We should at this time test the occlusion again. I know we all have experienced this dilemma that we have fitted our wax model very carefully and been sure the occlusion was correct, and we have felt positive that the inlay had gone to place and yet had the patient complain of that inlay striking on closure. I know I have been confronted with that. Whether it is any change in the form of the gold or whether it is the fact that we do not quite get the inlay seated even while it seems to be seated to the naked eye, I don't know, but in any event we must watch the occlusion very carefully at this particular stage and then grind the inlay if marked by the patient on closing the teeth and moving the jaw sidewise. I have spoiled many inlays that I have very carefully carved. Still, we must have an inlay that will not impinge too hard against the opposing tooth.

The inlay should be polished as carefully as possible after testing the occlusion and the margins, and there is one margin that is often overlooked and that is the gingival margin. We should be very careful that that margin is in perfect line with

the gingival margin of the cavity. Then it should be polished. We should leave as little to do in the mouth as possible. One of the greatest advantages of the inlay is that so much of the work may be done out of the mouth and in that way we relieve the nervous tension of the patient. Then when we are sure the margins are perfect and we are ready to cement that inlay to place we must take a very careful survey of the particular way in which the inlay goes to place most perfectly. I have never seen two exactly alike in my life, and now is the time to observe just how you want to apply force to that inlay to seat it perfectly, because I have been confronted frequently by having the dilemma of one that went to place perfectly without cement in the cavity and when I came to cement it, I wasn't able to seat it in exactly the same relation.

First having the cavity dry, the mixing of your cement is an important matter. We want to get it of a consistency that it will have some integrity under after setting, and still we don't want it so thick that the force upon the inlay will not express every bit of it to allow the inlay to go perfectly to place. Many of us have made the mistake of mixing the cement too thin to hold the inlay in place. Fortunately we have cement made for that purpose and we have better products than we had before. Having everything ready, let the assistant mix the cement, then force the inlay to place in the cement in the cavity. I use for this purpose a heavy, soft lead mallet covered with leather with a plugger, and it is forced to place by the mallet blow. After having some of those cases not go to place perfectly I have used after the mallet blow some unvulcanized rubber over the inlay. I place the unvulcanized rubber over the inlay and tell the patient to bite down upon it with all the force they have, and frequently after I have used the mallet blow in every conceivable way and have not been able to tighten the inlay down to my satisfaction, I have found that the patient by closure on that rubber will seat the inlay and squeeze a little more cement out from under it. Since I have been following that, I have been able to seat inlays better than I have ever before.

As soon as I am certain that the cement has begun to set, there is one little detail of technique which I fell down on terribly for a long time until I found I had some unhealthy interproximal spaces as a result, and that is this: be sure to remove every bit of the surplus cement from the interproximal space before it becomes hard. Just as soon as it begins to stiffen up so that it is safe to take the pressure off, I go into

the space very carefully and religiously clean every bit of the cement out. I have known cases where some of it has squeezed up on the inlay and remained there; and remember, an irritant of that kind, of oxy-phosphate of zinc, is just as bad to that gum tissue as serual calculus. Be sure the interproximal space is perfectly clear of oxy-phosphate of zinc before it has become hard. Then you can trim the rest away very carefully and then test the inlay again to see that the occlusion is normal. Formerly I avoided doing very much finishing in the mouth, and I therefore did not leave the best margins. Ordinarily now, no matter if I polish the inlay carefully before, I run over every margin after cementing either with a fine stone or disk and dress the inlay down against the margin, letting the rotary instrument revolve always from the gold to the margin to spin the gold down a little tighter against the margin, and I think that will improve any inlay, I don't care how carefully it is finished before.

If you will follow out an operation of that kind you will have a restoration in that tooth that in the ordinary case will do better service than almost any other kind of operation you can make. I want to say it will do better service ordinarily than will the best inserted amalgam filling. I don't want to discredit amalgam, because it has done a useful service, but we will never have upon it the same hardening quality at the contact point as upon the gold inlay made in this way.

I want to correct a possibly wrong impression when I advocate the gold inlay for these restorations. I do that for this reason, that I believe the average operator will get a better technique with the gold inlay than he will with the contour gold foil filling made in the way we are obliged to make it. I want to qualify that by this statement, that I do not believe there has ever been placed in a human tooth an operation that will do equal service to a well condensed, well adapted, well contoured and well finished gold foil filling. I don't believe any other operation has ever been made that will be as absolutely reliable as that, and I believe the best operations we are making to-day with the gold inlay will not stand up for the number of years that did some of the gold foil fillings we inserted years ago.

The reason I advocate the inlay is this, that I believe a larger number of these cases will be made serviceable with the gold inlay than with the gold foil filling. When I make the statement that the gold foil is the best filling that can be inserted, I mean that it must be carefully done from beginning

to end and that it is an exacting operation. I remember the days when I inserted contour gold foil fillings in the lower third molars, building up the disto-occlusal surfaces in that way. It was before the days of the gold inlay, and I have never been sorry that I inserted those fillings. But, with the large number of patients we have to deal with to-day, with the increase of the nervous tension of our people, we cannot afford to subject those patients at this time to the long operations we did twenty-five or thirty years ago. We must avoid, in the growing importance of dental operations to the public, overtaxing those patients in a nervous way. We must meet more and more people. It is said only about 20 per cent. of the citizens of the United States have dental service aside from extractions. We must meet a larger and increasingly larger clientele, and if we are going to meet them we must try to dispel from their minds the fact that dentistry is necessarily a very painful and nerve-racking operation; and with that in mind I believe the average operator can get a better technique and better results in the average case with a gold inlay than he can with a gold foil filling in these large restorations. I have not come to the point where I want to throw away my gold pluggers. If I did I would want to stop practising dentistry to-morrow. Gold has been too good a servant of ours, and I want to see every operator capable of handling gold in every case where gold foil is clearly indicated, and where the inlay is not indicated.

I want to close by saying this, that by whichever method any given operator can get the best results and serve his patient to the best advantage, that is the method for him to use. We must not be wedded to any one idea or any one method. God knows we have not enough methods to-day to adequately meet all conditions that come to us in the human mouth; we want to be able to take advantage of every one of them. I would deplore the fact that any man was practising dentistry to-day who could not make gold inlays, as I would deplore the fact that any man should be practising that could not introduce a good gold foil filling. Everything we can command is not too much to serve the people we meet to-day.

To go back to special cases. One of the things probably that has puzzled us as much as any other is in extensive restorations in molars or bicuspid, particularly a molar on both the proximal surfaces and the occlusal surface, what we call an M.O.D. cavity. Those are inlays which probably have disappointed us as much as any. Frequently with the most

Careful detail—not as often with careful detail as careless, but frequently with careful treatment—we will be confronted with the fact that when we have cast the inlay and tried to seat it it does not quite go to place at each gingival margin. There may be many reasons for that. It may not be so much due to the shrinkage of the gold as to the binding of the inlay in the occlusal cavity, but in any event there is sometimes that discrepancy.

Now, there are two suggestions I have to make in that connection that I think probably may help in overcoming some of those difficulties. One is that the sprue wire should be placed not at the contact point in that kind of inlay, but midway between the mesial and distal surface on the occlusal. That gives you a better opportunity of distributing the gold evenly under pressure. Another is this, that in the preparation of the cavity I like to bevel the gingival margins of the cavity quite extensively, although I seldom bevel this margin much in **any** other case. I want to have in that region instead of a butt joint a lap joint. The reason for that is this, where there is an extensive lap joint, if there has been a slight shrinkage of the gold, if it doesn't go to place perfectly you have the opportunity with that lap joint to burnish the gold down slightly and tighten it. I am not very partial to burnishing either a gold foil filling or a gold inlay. But that is one place where I would use a burnisher.

We have discrepancies in making cast gold inlays which are very hard to account for. I do know this that in carrying our technique along apparently careful lines we will have failures at times. We have fewer failures, however, to-day than in the early days with this method.

I will say this in conclusion, if we will only give the same careful study to the principles and technique of the making of gold inlays that we have in the past to the making of gold foil fillings, we will have an additional aid in saving the teeth of our patients.

DISCUSSION.

DR. SHANTZ: About how much bevel do you give those on the proximal surface?

DR. JOHNSON: It is very difficult to give the degree of bevel. You are all familiar with those long tapered stones of carborundum. If you are not, I would like to see you get them. They are a great convenience in the preparation of cavities for inlays, the greatest convenience that I know of. I would take such a stone about a millimeter and a half at the point

and tapering up thicker. Then I pass that right along the gingival margin back and forth, giving just about the degree of bevel that will result when the shank of your instrument lies across the junction of the axial wall with the step. I would vary it in different cases. It has been suggested that you cut that bevel with a spoon-shaped excavator. I have not been able to handle an excavator in that particular place, and I use a stone in every instance. I do not use even a fine cut burr.

QUESTION: When you have your wax inlay and want to take it out of the cavity, wouldn't it be better to clean it with soap than alcohol?

DR. JOHNSON: I have never tried soap for that purpose. Probably it might be excellent, but if I did that with soap I should want to follow it with acetone. I wouldn't want any soap on there.

DR. DAWSON: Is it not a good idea to use the matrix?

DR. JOHNSON: The question is asked, is it not a good idea to use a matrix for the fitting of the wax model in these extensive operations? It is. You get the support of that matrix to hold the wax in place. It takes a little time to make the matrix of course, but you do get the additional support of that matrix while giving you a pressure laterally against the cavity when the wax is forced in place.

DR. CLARK: Is acetone a solvent of it?

DR. JOHNSON: Yes, acetone is simply a product of alcohol; it is more effective than alcohol.

DR. WEBSTER: Could you go over the merits of the indirect method?

DR. JOHNSON: The question is raised as to the merits of the indirect and direct methods. I want to preface that with a statement that I believe the most beautiful work can be done by either method, but for myself, personally, where I have not that wonderful faculty of shifting my work to somebody else, and where I have to do a great deal of it myself, I like the direct method, and I will tell you why. The virtue of the direct method is this, you have a fewer number of processes, you are fitting that wax to the actual thing itself when you are fitting it to the cavity in the tooth. With the indirect method you take an impression of the cavity to make your model and you increase the number of processes and thereby increase the possibilities of little discrepancies creeping into the technique. There is this advantage of the indirect method to an operator who has assistants, it shortens up the time he is obliged to spend upon it himself. I am not so constituted that I have the

ability to turn over work to other people like that. I wish I was, but I have to do so much of it myself, and I would not want to increase the number of processes that go with the indirect method; it takes very much longer; there are an additional number of processes, and I should have the feeling all the time that there was danger of little discrepancies creeping in here and there in the increased number of technical details. I have seen beautiful work done by either method.

DR. MACLACHLAN: Will you tell us about what percentage of operators use the indirect method?

DR. JOHNSON: I couldn't tell you the percentage. Some of the very best men we have in the profession are using the indirect method, but they have not converted me.

DR. TROTTER: With an M.O.D. cavity, won't you be more certain of exact results by the indirect method?

DR. JOHNSON: I can't see how you can be more certain of exact results even with an M.O.D. cavity by the indirect method than by the direct method. If you make a mistake in working on the tooth itself, you are just as liable to make a mistake in working on the model.

DR. SCOTT: In the M.O.D. cavity, do you ever try putting a sprue at the contact point, at the one end, and carrying a thread around to the opposite side?

DR. JOHNSON: In many of these extensive restorations we make more than one sprue attachment. I wouldn't do it in that way, putting the sprue wire in one contact and a loop of wax over to the other side, but I would place that sprue wire immediately in the occlusal surface midway between the mesial and distal, and then run a wax rope from the sprue wire down to the contact point of the one side, and another down to the contact point on the other side. That is likely to bring about a better distribution of the gold.

DR. DEVITT: Would you object to tell us what type of casting machine you use?

DR. JOHNSON: From the very first of my inlay work I have used the Taggart machine; I have used that more than any other because I believe I can get an absolutely definite degree of pressure on the gold measured by a gauge, and I know how much force I am inserting on that investment when I am casting. With the steam machines and others it is more difficult to regulate the pressure. I will say as to the amount of pressure, I seldom use more than eight pounds. I have been advised by some men to use only six pounds, but I use from six to eight pounds pressure. The investment that we employ to-day, I

believe, will stand up well without distortion under that pressure, but if we use too high pressure, we are liable to get a little distortion of the mold.

QUESTION: Is it possible now to purchase a Taggart machine?

DR. JOHNSON: I doubt whether it is or not.

DR. SPARKS: In the preparation of a cavity, would you recommend all decayed portions to be removed before you take your impression?

DR. JOHNSON: If we have a cavity in which the walls are strong, but in which there has been some penetration of the decay undermining that wall—that is the point raised by Dr. Sparks, and it is a good one—take that decay out. I don't ordinarily make a fitting of the wax model over any decay, but I would take that decay out and place some oxy-phosphate of zinc in that and let that become hard and then make the fitting of the wax model.

DR. SPALDING: In using your gold highly heated, do you find sometimes there is a little fusing occurs?

DR. JOHNSON: No. I sometimes find a little of the investment will stick to the gold. You mean fusing into it?

DR. SPALDING: Yes.

DR. JOHNSON: No, I have never had any experience of that. I believe in heating that gold sufficiently hot so that it is almost liquid, so that it is quivering. I believe you get the finest possible casting from that superheated gold.

DR. MALLORY: What about the cleanliness of the gold, isn't that important?

DR. JOHNSON: Yes, that is important. The cleanliness of everything you are doing in this is important. You will get uniformly better results day after day if you take the surplus gold button and melt that up again in saltpetre and have a fresh piece to cast with every time.

DR. WILLIARD: Do you ever use borax in melting gold?

DR. JOHNSON: When I have melted up that nugget of gold, when it is thoroughly melted, I have a little strip of 22k. gold rolled into a coil, and I force that into some borax and just put that on top of the melted mass; that borax flashes off instantly, but it leaves the surface perfectly clean. After that gold is cast, I have it cleaned by heating it and dropping it in sulphuric acid. Hydrofluoric acid has been recommended for that, but hydrofluoric acid is a dangerous thing to have around the office, and if your young lady assistant does this for you,

there is always danger of some injury. I have the assistant use sulphuric acid, and that answers the purpose.

There is another point in regard to the retention of the inlay. There is one particular kind of stress brought upon these inlays that is often overlooked, but which is sometimes very severe. That is the mastication of sticky candy. When the teeth are closed on a caramel, and then opened, the lifting force on the inlay is very great, and many are loosened in this way. To provide against that, never leave the cavity side of the inlay as it comes from the cast. Ordinarily cut a groove bucco-lingually across the cavity side of the inlay with a sharp stone, somewhere near the occlusal. That is advantageous in two ways, the cement flows into this and it helps to hold the inlay against that lifting stress; it also gives it a little place to grasp with the pliers, and you can handle it more easily. I ordinarily take a small drill and roughen the cavity side of the inlay. I have seen so many inlays drawn out that I feel we cannot be too sure in fastening these inlays to place against the lifting stress, particularly as the years go on and oxyphosphate may deteriorate.

DR. WARD: Do you advocate a wax sucker?

DR. JOHNSON: This relates to the withdrawing of some wax from the cavity side of the inlay, making a cavity in there before we invest the wax. That is done for two purposes, the saving of gold and the additional retention of the inlay by the flowing of the cement into that excavation. I have never used a wax sucker. But I think you can take a spoon excavator or a hatchet excavator and take part of the wax away in two or three seconds if you want to do that. I am prejudiced against a hollow inlay. When I remember the aggregate amount of force that is brought to bear upon one of those inlays in the course of a meal, when the patient will come down upon that inlay sometimes a thousand times in the mastication of a dinner, and when in eating beef steak, and bringing those molars down through the steak they have to close upon it with from sixty to eighty pounds pressure, depending upon whether it is boarding house beef steak or not, and when that process is kept up day after day, the aggregate amount of force that is brought to bear upon these operations sometimes staggers me, and it makes me doubtful about putting anything in that is not solid from one end to the other, so I don't like hollow gold inlays.

DR. CLARK: In making these cavity preparations, is there not great danger sometimes of affecting the pulp?

DR. JOHNSON: Sometimes in making a cavity preparation we do get, in the gingivo-linguo-axial region or the gingivo-bucco-axial region of those cavities, sometimes pretty close to the pulp. If there is any doubt in my mind that cementing the inlay will cause any pressure that will in any way bend that thin wall, I take a stone and grind off that sharp point of the inlay on both angles before cementing it to place. The saving of pulps is more important to-day than it ever was.

Now, I must give way to the essayist who is to follow me. I want to express my appreciation of the careful attention you have given me, and I want to say it is going to be a pleasure to look forward to meeting you again this afternoon.

WORK OF THE ARMY DENTAL CORPS

CAPTAIN BARBOUR, Base Hospital, Toronto.

Delivered before the Ontario Dental Society, May, 1918

Gentlemen,—I have been asked to present to you the work of the Army Dental Corps, in so far as it is carried on in the Base Hospital, District No. 2, located in this city. The work is a very large one, as you know, and has very many avenues of usefulness. It may be of interest to you to know something in reference to what the Base Hospital is. I appreciate that a large proportion, possibly all of you here, are aware of the work being done, and know something of the methods being carried out, but some of you may not be. The Base Hospital was originally designed for the treatment of men who are in active training going overseas. The Base Hospital in Toronto does not only cover that ground, but in connection with that we have a certain number of men who have been overseas, but who have been afflicted with some of the infectious diseases, or venereal troubles. These men are sent to the Base Hospital. We also have an officers' quarters, where sick officers, or officers returned from overseas for treatment, are being cared for. We have besides that in connection with clinics, work to do for men who have returned from overseas, who are discharged, or about to be, and the Militia Department, through the Dental Corps, has undertaken to make them dentally fit before they go out into the world to make their living.

In connection with the work we have, especially in the hospitals, a very fine equipment. We have been very highly

avored in this regard. You will find, if you have been in them, or choose to go in, that the very best chair is provided with its external equipment, switchboards with air pump attached, nitrous oxide apparatus of the most modern type, and there has been provided through the hospital authorities X-ray facilities, which make it possible to have proper investigation in connection with the work.

The method by which a clinicist in the Base Hospital takes hold of his patients is that every man who presents himself, whether an N.C.O. man or an officer, must be accompanied by a requisition signed by the medical officer. This requisition shows the ailment that has brought about the man's visit or stay in the hospital, the time for which he is there, and any particulars required that may be for the benefit of the dental officer for diagnostic purposes. Immediately on his entrance an examination is made, if time will permit, a determination is made as to the work required, and if X-rays are needed requisitions are prepared, so that at a later date that work can be done as comprehensively as possible.

In connection with the work in the hospital there has been a very cordial harmony and co-operation between the dental officers and those in charge of the other departments. This relates particularly to the nose, throat and eye clinics, and to those who have to do with the work in connection with digestive troubles, heart lesions, arthritis and any of those things that are related to dental work, or that may be remedied through it. Many cases are referred to me by these other officers in other departments, and I am asked to assist them in the diagnosis and in the treatment, and we have worked together satisfactorily with mutual benefit.

The work that is being done is not very different from what is done in other places. There is the ordinary routine work that you will find going on in various offices in connection with operative work, orthodontia, etc., and then besides that there is a little more apt to be, in connection with the Base Hospital, work of an extraordinary character which has involved the necessity for the patient to be admitted to the hospital. This applies to cases of fractures, serious necrosis, or antrum troubles, etc.

The work has been very satisfactory in the sense that the patients have been very appreciative and very anxious to have performed for them that which will give them the best value for their work in actual training or in after life on being discharged. The time does not permit to attend to all; it does

not permit to do the most exact work we would like, but in spite of that fact it has been very gratifying, and we have been able to do work that is satisfactory to a degree that has made the work there of great value.

The work of the Dental Corps and the equipment of the Dental Corps has not failed in being appreciated by the higher powers, because I had the pleasure of reading a copy of a letter written by Col. Bickford after an inspection of our dental clinics, in which he paid a very high compliment to the appearance and to the work that was done, and the enthusiasm of the officers.

I have just been asked in reference to the venereal section of the hospital. The work, as far as the dental staff is concerned, is not work that will be along the line of treatment. This work is done under special officers in the hospital, but incidentally when they are in need they are referred to the dental clinic for dental treatment. So far as the cases of the less objectionable type are concerned, there are no precautions taken other than the ordinary sanitary or sterilizing processes. In connection with specific disease, we are always warned by these requisitions of what is coming in, and we take the precautions you would naturally take in your offices. They are referred to us by the medical officers, who have indicated their trouble, and whether the condition is infectious or not.

There are some special cases I might mention. Fracture work has been work that has given a good deal of pleasure and satisfaction, all the different types having been received, I believe, from the minor fracture of the mandible to the full extensive fractures; even five in number in one case. In connection with this district there is a great deal of training in connection with the Flying Corps, and as a result accidents happen, and more extensive fractures come as a result of that work than we get in connection with private practice; and a certain originality has to be expected. In connection with the most extensive cases I have had, one comes to my mind at present where the maxilla was fractured in three places, necessitating the extraction of several teeth and two segments. There were three fractures also of the mandible, one at the symphysis, one back of the wisdom tooth, and another across the condyle. So far as the upper jaw was concerned, these were placed in what were believed to be the exact position and left alone for the time being. In the lower jaw a crib work was made of modelling compound with broad wire loops for

attachment to a cap on top of the head, which retained the parts in actual contact until the upper segments became sufficiently tight, the two jaws being then wired together so that we were able to get occlusion. I find the head piece is valuable on certain occasions when it is undesirable to bring the jaws in absolute opposition, either for sanitary purposes or because of the difficulty of breathing through the nose. There have been some cases where in connection with the fracture there has been some displacement of the bones in connection with nasal passages which have caused an impossibility to breathe, except through the mouth.

The simplest method that I have for taking care of small fractures may be of interest to you. I had a case not long ago of a simple fracture just between the central and lateral of the lower jaw, where the anterior teeth were all in place. That was readily taken care of by taking ordinary half-round clasp wire and making it sufficiently long to pass around the first molar and second bicuspid on both sides, and having it so that there was one loop on the outside and a double loop on the inside following the contour of the jaws. After this was placed a stout ligature or wire was passed between the teeth below the wires and back again (between the same two teeth) and bound together, each one of these being bound very tightly. Those wires were sufficiently strong to prevent any movement, and the patient has perfect use of his jaws, and is able to take very good care of the cleanliness of the interior of the mouth, and he can do a certain amount of mastication without danger of displacement.

Before I stop I would like to refer to another work that has been done to a slight degree in connection with the clinic at the Base Hospital, and that is "prosthetic restorations." There have been a certain number of mutilations in connection with this war that have left patients very unsightly, and ordinary plastic operations have not been possible to a sufficient degree to restore the appearance satisfactorily. In a couple of cases, one particularly, I have been able by the use of vulcanite, to restore the appearance very satisfactorily. In one particular case which I will refer to, the nose being very nearly gone, and the side of the cheek so depressed and so disfigured by a scar that the patient was very much embarrassed in presenting himself to the public. A number of operations of a plastic nature had been performed, but not successfully enough to make the patient so that the wound was entirely filled in. If you are interested enough I will try to tell you

something of the way in which this appliance is prepared. In order to get the model from which to work, the parts that are affected, as well as the opposite parts of the face which are disfigured, are covered with vaseline, and then thin plaster of paris is mixed, so thin that it is like cream, and an effort is made to mix it so that it will harden very slowly. With a camel's hair brush an outline is made of this plaster of paris to the fullest extent you wish to get a replica of the face. It is gradually added until the whole part is covered, and until you get sufficient thickness so that it will be self supporting when removed. In about 15 minutes it will be hard enough to remove. In the first place it is necessary that you make coverings of any apertures, so as to prevent ingress of the material and prevent removal. Upon its removal you have an impression of the face, of the part affected, as well as the duplicate part. From that a model is made which will represent the face, and upon that, along with a photograph, if it is possible to get it, there is built up a duplicate in "plasticine" which you are acquainted with. It is very readily modelled to duplicate the original parts. For my part, I was fortunate enough to get Mr. Banks, of the Toronto University, to do the modelling, and we were able to duplicate the part very satisfactorily. There are others anxious to do the same thing in the city. Amongst those doing that work there are men who are anxious to contribute, and are willing to assist in any work of this character. I have tried more than one method of duplicating the face, and I find that the parts can be duplicated very satisfactorily in vulcanite. That material is preferable. I tried velum rubber, and I found, although it was flexible, it was difficult to get the margins smooth and thin in the finishing. So that the last effort was made with ordinary vulcanite, vulcanizing slightly but sufficiently, not to get it as hard as you would have it in a denture; the edges are pared down thin, and if in the final fitting you don't find it exactly right, you can by slightly warming it get it to fit the condition absolutely. In order to change this over from plasticine to vulcanite it is done in the same way as you would do a denture, the thin material being readily removed after the flask is opened. A very important part of the work is the tinting, and that should be done by a real artist; and they are not easily gotten. I find the flesh tint is the most difficult thing to duplicate of any. A man used to doing landscape work is of no value in that line at all. But the work that Mr. Banks

did proved satisfactory. That is the main point in this work—to have an artist who can duplicate this tint.

I don't wish to take up any more of your time. I just want to say to you that the work in connection with the C.A.D.C. is a gratifying work. If you love your work, there is no way in which you can expend your effort to make you more happy than in connection with work for the soldiers. After you have seen what men have done, or are intending to do, in military lines, nothing is too good for them along your line, and you will be most happy in doing it, and it will be something that we who have taken part in, will be able to rejoice in for the rest of our lives.

Dental Societies

SUMMARY OF THE TRANSACTIONS OF THE ANNUAL MEETING OF THE NOVA SCOTIA DENTAL ASSOCIATION

THURSDAY, JULY 11TH, 1918.

It was purely a business meeting of two sessions. The president, Dr. S. G. Ritchie, was in the chair, and his address bristled with points emphasizing the increasing necessity of accurate scientific research and practise.

The report of the Dental Board showed 165 names on the dental register. Eight members have been added during the year: R. S. Crosby, R. V. Ferguson, L. M. Finnigan, H. G. Adamson, G. N. Stultz, G. A. Chudley, by examination; G. A. Sproule, by D.D.C. certificate; C. W. L. Stanford, by Act of Parliament.

A grant of money was made to the Dalhousie Dental School for extra equipment.

The financial statement shows a balance in the treasury of \$721.19.

Legal counsel was provided for the Dental Board.

Annual dues were fixed at \$3.

The Dental Board is authorized to act for the association in matters affecting the D.D.C.

The report from the Dominion Dental Council contained notices of motion from British Columbia and Manitoba which were discussed at length, and instructions given to the provincial representative.

Some of the points brought out in the report of the Dean of the Faculty of Dentistry showed:

The largest attendance in the history of the school last year.

Notwithstanding the disaster of December 6th, 1917, but two weeks of teaching time were lost.

The graduating class and every undergraduate who was physically fit and over age enlisted at the close of the session.

The dental library has been materially augmented with the latest editions, and the files of journals are being systematically bound. It occupies a section of the medical library of 6,000 volumes. This is also open to all dental students.

A research laboratory has been established, and already some very interesting work has been done.

The recent military orders will mean much to the classes in the medical and dental schools in Canada. The military authorities will not be to blame if dental students are not forthcoming for the freshman as well as all other classes.

The report of the Committee on Dental Education showed that a fine work is going on which will bring a large fruitage in the near future.

The C.O.P.A. has offered to supply display cards for public schools, slides and films for the education of children and the public at minimum rates. The Public School Board of Halifax has established one school dental clinic, and we are assured that a dental infirmary will be included in the plans of the new school buildings. The training of the teachers of the Provincial Normal School in Oral Hygiene has been authorized by the Council of Public Instruction, and a sum of money voted for the expenses.

A meeting of the Education Committee, with Prof. Connolly, of the Normal School, was held between sessions of the convention, and a course of ten lectures and demonstrations were arranged to be given during the coming session by one of the teachers from the Dalhousie Dental School. This will be a splendid propaganda, and make it possible to do some work throughout the Province in the near future, and educate the public in a way in which it has never been undertaken in this Province.

The following roster of officers was elected for the ensuing year: President, Dr. M. F. Ronnam; First Vice-President, Dr. G. R. Hennigar; Second Vice-President, Dr. R. H. Woodbury; Secretary-Treasurer, Dr. W. C. Oxner; Member of Executive, Dr. S. G. Ritchie.

The above form the Executive Committee for the transaction of business *ad interim*.

The annual meeting of the Dental Board was convened at the close of the morning session. Officers elected: President, Dr. F. W. Ryan; Vice-President, Dr. Frank Woodbury; Secretary, Registrar and Treasurer, Dr. G. K. Thomson.

Routine business was transacted. The convention assembled at 2.30 p.m. The annual report of the Dental Board was presented. The report of the preliminary work accomplished by the Research Committee of the Dental College was then given by Dr. S. G. Ritchie, accompanied by microscopical slides and prepared specimens, which were exhibited and explained by Dr. F. W. Ryan. It surprised the convention to know that so much had been accomplished. The work in-

cludes the sterilization of pulpless teeth and the fixation of the protoplasmic contents of the dentinal tubules, without unnecessary staining of the enamel. For one hour the atmosphere was electric with interest over this subject, which is absorbing the thought of every honest and progressive practitioner. The report will, if possible, be secured for publication.

Adjournment was a signal for a rush to the golf links, park and other attractions in the beautiful town of Truro. At 4.30 p.m. a terrific electrical storm broke over the town, and rain and hail fell in torrents, until the streets were as white as mid-winter, and the foliage of trees and vegetation were cut to ribbons. Thus ended a most intense and interesting, but short dental convention.

ARMY DENTAL CLUB

MILITARY DISTRICT, No. 1.

The dental officers of Military District No. 1 have organized an "Army Dental Club," the object of which is to promote the welfare of its members, professionally and socially.

So far as we know this is the first organization of its kind in Canada. The club meets fortnightly, and its members are taking an enthusiastic interest in its proceedings.

It is proposed to invite outside dentists occasionally to address the club on dental subjects. At the other meetings the members will deal informally with, and exchange ideas upon, questions relating to their own special work.

At their first regular meeting Captain Hayden took up the subject of "Dental Radiographs," exhibiting a very good collection of radiographs depicting the very many abnormal conditions found in convalescent hospital practice. At the second meeting "Sterilizing" is to be taken up in a paper by Lieut. J. O. McCutcheon, and to be discussed by the members.

Dental students who are serving in No. 1 Detachment are invited to attend these meetings, so they may keep in touch with the newer developments in dentistry.

OFFICERS ELECTED.

Hon. Presidents, Brig.-Gen. Channon, G.O.C., M.D., No. 1; Lieut.-Col. H. D. Smith, G.S.O., M.D., No. 1; Dr. M. A. Ross Thomas; President, Lieut.-Col. F. P. Shaw, A.D.D.S., M.D., No. 1; Vice-President, Capt. W. Y. Hayden; Secretary-Treasurer, Capt. T. D. Campbell. Executive Committee—Capt. J.

N. Dunning, Capt. J. M. Deans, Capt. R. G. McMillan. Ways and Means Committee—Capt. F. G. Humphrey, Lieut. J. O. McCutcheon, Lieut. F. M. Deans. Propaganda Committee—Capt. R. G. McMillan, Lieut. K. Berry, Lieut. M. H. Hagey.

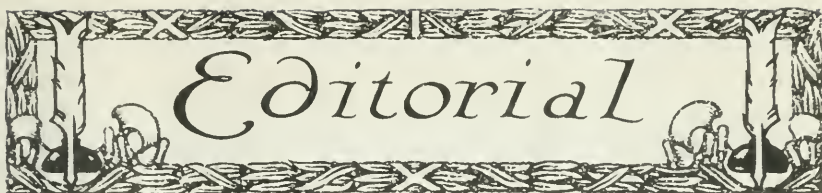
NOVA SCOTIA DENTISTS HOLD THEIR ANNUAL MEETING

The Nova Scotia Dental Association held its annual meeting in the Academy Hall, Truro, on Thursday, July 11. The following members of the profession were present: Drs. Frank Woodbury, S. G. Ritchie, W. G. Oxner, F. W. Ryan, G. R. Hennigar, R. H. Woodbury and Major G. H. Thomson, all of Halifax; Capt. H. L. Mitchener, of Aldershot; Dr. Ronan, of Antigonish, and Drs. Hopper, Hiltz, Langille and Daniel, of Truro. Officers for the ensuing year were appointed as follows: President, Dr. Ronan; First Vice-President, Dr. G. R. Hennigar; Second Vice-President, Dr. R. H. Woodbury; Secretary-Treasurer, Dr. W. C. Oxner.

CANDIDATES TAKING THE RECENT DENTAL EXAMINATIONS AT SASKATOON

Dr. Victor Barnes, United States; Dr. R. Bon Feitneur, Gull Lake; Sergt. J. A. Daw, Fort Osborne Barracks, Winnipeg; Dr. F. Douglas, Regina; Dr. J. H. Lamarre, Port Aix; Dr. E. R. McKay, Saskatoon; Dr. P. Rondeau, Assiniboia; Dr. F. E. Falisbury, Hanley; Dr. J. H. Mitchell, Hamiota, Man., and Dr. W. R. Wacheler, Minneapolis.

The British Columbia press seems from its editorials to be the most barefaced group of critics in the country. They have the nerve to complain because the Dentistry Act was amended at the last session of the Legislature so as to make it unlawful for a dentist to directly or indirectly publish or circulate any fraudulent, false or misleading statement as to his skill or methods of practice. In other words, these papers stand behind and support a dentist who intentionally sets out to defraud the public.



Editorial

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ALBERTA.—H. F. Whitaker, D.D.S., L.D.S., Edmonton.

NEW BRUNSWICK.—Jas. M. Magee, L.D.S., D.D.S., St. John.

NOVA SCOTIA.—Frank Woodbury, L.D.S., D.D.S., Halifax.

SASKATCHEWAN.—W. D. Cowan, L.D.S., Regina.

PRINCE EDWARD ISLAND.—J. S. Bagnall, D.D.S., L.D.S., Charlottetown.

MANITOBA.—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA.—H. T. Minogue, D.D.S., L.D.S., Vancouver.

VOL. XXX.

TORONTO, AUGUST 15, 1918,

No. 8.

BRITISH COLUMBIA DENTAL ACT

It is very doubtful if an Act of Parliament can be framed in such a manner as to be effective if it can be shown or surmised that its provisions are in the interests of a corporation as against the people. This is especially true if the corporation must institute the proceedings. Magistrates will not convict. Such cases must be taken to higher courts. A year or more ago the British Columbia Dental Act was amended in a very castiron fashion to prohibit dentists from making false statements which would tend to deceive the public. The Act undertakes to enumerate specific things which are false; *e.g.*, painless dentistry, special drugs, anæsthetics, special materials, etc. It is just these very enumerations which makes it difficult to get a conviction.

While the British Columbia Board failed to get a conviction, there is no doubt in the mind of any ordinary citizen reading the reports in the press coming to the conclusion that those accused were aiming to deceive the public. One advertiser said that teeth treated by him would give the patient no further trouble. In court it was solemnly said that a tooth

extracted could give the patient no further trouble. This reminds the writer of a certain undertaker in a town in Ontario who regularly advertised in the local paper that persons once using his coffins would have no other. While the statement of the court that an extracted tooth could give no further trouble is entirely false in itself, the writer of the advertisement knew that it is not considered to be a treatment for a tooth to extract it, no more than a treatment for lameness to amputate the leg.

Dentists are not allowed to advertise any material which they use, but one bright fellow advertised that he made a fine, firm, thin, natural plate by means of a new composition for taking an impression. This was undoubtedly intended to convey the idea that owing to the new material he was able to make a fine, firm, natural plate. Any dentist knows that the composition of the impression material does not govern the fineness, or natural appearance of the plate. It was claimed that S. S. White sent out a new impression material in 1915, and the court accepted this as being within the Act as being new.

All the cases reported in the press were dismissed, thus indicating that it is almost impossible to get a conviction where the general press and the people seem to be against the Act. The situation would be vastly different if the Dental Act were in the same position as the Public Schools Act. Violations of the Act concerning qualified teachers is promptly attended to by the Legislature in the interests of the people, but in the case of dentistry the public can see nothing but a close corporation, more castiron than trades unions. It should be the duty of the profession of dentistry to spend some time and effort in showing that the Dental Act is in the interests of the public, and not the profession. The intention of the legislation was that the public should not be deceived. There ought not to have been any thought of the dentists, and it ought not to be their job to prosecute offenders. The body which makes the laws should bring offenders to the courts. The very fact that the corporation asking for the legislation must do the prosecuting makes the public, the press and the court suspicious that the corporation is in some way personally interested in the prosecutions. There should be no legal objection to advertising dentistry provided the truth is told, but when a dentist advertises that he can treat teeth, and they will never again trouble the patient, he knows he is lying, and he also knows that he is lying so that people will consult him and thus

increase his clientele. When a dentist advertises that he has a specially new material it may be true, but every other dentist may have it; but when he says that this method or material is his invention, or private right, he is usually lying, because the secrets of nature are rarely unfolded to the ignorant or to blatant advertisers. When a dentist advertises that he has special skill he is wanting in modesty, to say the least. The chances are ten to one he hasn't got it. It is remarkable that those who advertise their special skill lie to the public about other things; so it is reasonable to conclude that they are lying about their skill.

The British Columbia Board has done well to bring these men to court, because public attention is called to the fact that dental advertisements are looked upon as of doubtful veracity in the minds of the main body of the profession. The public will finally awaken to the fact that some things are impossible in dentistry as in other things in life.

The lying dental advertiser is hard to reach when the press are fighting for him. Respectable publishing houses will not take untruthful advertisements, such as quack medicines, etc.; neither will they advertise the sale of that which is contrary to law. What about the liability of a paper which advertises that which is contrary to the Dental Act in British Columbia? There is a Dominion Act which should catch such dental advertisements as sometimes appear in Canada. It shouldn't be hard to prove before a proper court that an advertisement which claims special methods, skill or appliances, and not having them, is contrary to law.

Editorial Notes

Dr. Harry Lehr has joined the Royal Newfoundland Regiment as a private.



Dr. E. V. Humphreys has opened a dental office in Guelph, Ont.



Dr. P. W. Winthrope, Saskatoon, is visiting Carleton Place after twenty-seven years of absence.



The Board of Control, Montreal, made a grant of \$200 to each of the Montreal general hospitals, St. Luke's and Water Street.

T H E D E N T I S T ' S L I B R A R Y

Elementary and Dental Radiography. By Howard Riley Raper, D.D.S. With over 500 Illustrations. Second Edition. New York: Consolidated Dental Mfg. Co. London: Claudius Ash, Sons & Co., Ltd.

This book has now reached the second edition because of its value as an elementary work on the subject. It is essentially prepared for beginners in the practice of radiography. One of the best features in the book is the instructions in reading radiographs. The Question Assignment Book is a great help, because it tells where the answers of the questions may be found. The purpose of the book is well brought out in preface, a part of which we will quote:

"The object of this book is to teach, first, the elementary principles of radiography; second, special dental radiography."

The first part of the book is written on the presumption that the reader knows nothing about electricity, photography, or the X-rays, and might therefore be used by anyone who wishes to take up radiography work, whether a dentist or a physician. In dealing with the preliminary subjects mentioned, an earnest effort has been made to avoid useless, impractical and confusing elaboration.

The second part of the book is devoted to dental radiography, and is consequently of interest mainly to dentists and specialists in radiography who do work referred to them by dentists. It gives in detail the special technic involved in the practice of dental radiography, also a chapter with one hundred and eighty-three half-tone illustrations, demonstrating sixty-four different uses to which the radiography may be put in the practice of dentistry.

The uses of the radiography in the practice of modern dentistry is not a mere fad; it is a necessity, if one wishes to render the best dental service. Nothing but great good can come from its more frequent use. To the end of bringing about a more extensive use of the radiograph by dentists this work is published. At present it is the only work of its kind on the book market.

Dominion Dental Journal

VOL. XXX. TORONTO, SEPTEMBER 15, 1918. No. 9.

Original Communications

CANADIAN DENTAL ASSOCIATION PRESIDENT'S ADDRESS

J. NOLIN, D.D.S., L.D.S., Montreal.

Delivered before the National and Canadian Dental Associations,
Chicago, Ill., August, 1918.

Mr. Chairman and Gentlemen,—When an invitation was received some months ago from the National Dental Association of the United States for the Canadian Dental Association to hold its next meeting in Chicago jointly with its fellow-organization, hesitation was manifested in some quarters as to the wisdom of accepting it. But, after a thorough canvass of the profession and a full discussion of the subject, your Executive decided to answer in the affirmative. All Canadians present will bear me out when I say that we shall surely have no reason to regret this decision.

Our visit to Chicago, our more intimate intercourse with our American confreres, whom we have long ago learned to admire and to love; the sight of their wonderful work, the contact of their marvelous energy, spirit of self-sacrifice and professional enthusiasm, cannot help but be an inspiration for us in the future.

Since our last meeting, grave events have taken place, which have affected, to a certain extent, our profession. When conscription was voted by Parliament, opinions differed as to whether dentists and dental students should be called upon to serve otherwise than as members of the Dental Corps; or whether, like the medical men, they should all be reserved for dental service. Your president, among others, took the view that, whereas the dental profession is even to-day seriously undermined, and, whereas, its services are essential to the conservation of public health and military man-power, the taking of a dentist to make a military unit when that dentist is apt to render fit for the service scores of other men who

would not otherwise be so, would be almost as unwise as it would be to use the machinery of a munitions shop as material for munitions. Several leaders of the profession were of the same opinion, and the best proof that this opinion was based on solid reasoning is that, after a great deal of correspondence, many interviews and long discussion, the Canadian War Council finally were convinced of the wisdom of our contention and have acted accordingly.

Other problems as difficult to solve have arisen from the war. A new dental science, born of war conditions, has arisen. I speak of facial and maxillary prothesis. Hundreds, and perhaps thousands, of men will return from the front needing, for decades to come, special dental services which the profession has neither the knowledge nor the power to give. These men should not, in my opinion, be used as subjects for experimental work. They have jeopardized their lives for us, and they are entitled to the very best that can be found.

Your president suggested to some of the leading minds in the profession that if we could at this meeting get from France and from England, men who have shown ability, and who have a wide experience in this line of work, to come over to this meeting and initiate us into the mysteries of facial and restorative prothesis, and if, moreover, and still more important, these men could be induced to meet and instruct the teachers of our dental schools in this new art, the problem would be partially solved through corrective efforts.

We have among us Lieut.-Col. Hume, of Orpington Hospital, in England, a man of whom the Canadian dental profession and the C.A.D.C. have the right to be proud. To the special committee who have obtained from the Canadian Government a leave of absence for Lieut.-Col. Hume, and permission to attend this meeting, we owe our sincerest thanks.

Those among you who have read the report of the Inter-Allied Congress, held in Paris in 1916, where the discoveries made in restorative prothesis since the beginning of the war are exposed in masterly fashion in a 1,500-page volume, each page of which is a revelation to the uninitiated, may have felt as I have—that the man who edited the volume acted as secretary to the congress, and is himself the author of several of the most wonderful contributions. Dr. Villain, of the Paris Dental School, seems to be the very soul and inspirator of this new science.

After trying several ways of finding means to get Dr. Villain to come over to this meeting to expose the work done

by him and by his Paris confreres during the war, your president, as a last resort, addressed himself to Mr. Justin Goderd, a member of the French Government, who recently paid an official visit to this continent. Mr. Goderd, who is the head of the Medical Service of the French Army, looked with favor upon the request, and the following letter, received July 23rd, is the result of the interview he granted your president:

“Office of the High Commissioner of the French Republic,
“1954 Columbia Road, N.W.,

“Washington, D.C., July 23, 1918.

“Dr. Joseph Nolin, President Canadian Dental Association,
Montreal:

“Mr. President,—In answer to your letter addressed to Mr. Justin Goderd, dated July 2nd, 1918, I have the honor to inform you that I have just received from Paris the following cablegram: ‘Military Dentist Villain, attached to the Military Government of Paris, Secretary of the Paris Dental School, has been appointed to represent the National Dental Federation of France, and to expose the results obtained in France since the beginning of the war in the treatments of facial and maxillary lesions, of the ninth biennial meeting of the Canadian Dental Association in Chicago.

‘(Signed) MOURIERS.’

‘Secretary of State for Public Health.’

“I am happy to transmit to you the favorable results of my intervention and my best greetings.

“For the High Commissioner, by order,

“P. MAURY.”

I inferred from this letter that Dr. Villain was on his way across the ocean when the cablegram was received in Washington. I have, however, had no further news about Dr. Villain until this morning, when I received word from New York that he arrived this morning. I expect Dr. Villain to turn up any moment in Chicago, and I have no doubt that he will receive from the Canadian and the National Associations a reception worthy of his distinguished service to his profession and his country.

Several other questions will be placed before you by the different committees, and will receive the attention they merit.

Before concluding, your president would suggest a change in the constitution of the C.D.A. which might help the organization of future conventions. It would be that each year the retiring president be left in charge of the organizations of

the C.D.A. and of the following meeting, as is done in the N.D.A., and the term of the new president to begin with the opening of the meeting.

Trusting, gentlemen, that all the members of the C.D.A. will reap the greatest benefits from this meeting, it is my sincere hope that the Canadian Dental Association will keep up its good work, and that the fraternal feeling which has always reigned within its ranks will forever continue to prevail.

ORATION ON THE LIFE AND WORKS OF THE LATE DR. G. V. BLACK

A. W. THORNTON, Dean Dental Department, McGill
University, Montreal.

Delivered before the National and Canadian Dental Associations,
Chicago, Ill., August, 1918.

It would be the veriest hypocrisy for any man to pretend that he did not look upon such a privilege as is mine to-day as a very great honor, and it would be an insult to your intelligence to expect you to believe that such an occasion is one of the ordinary events of any man's life.

I appreciate the honor, and feel the responsibility more deeply perhaps than any of you can imagine.

Any ordinary man might perhaps have some knowledge of the application of colors to a canvas, might possess some ability in free hand drawing, might understand the underlying principles of perspective, but such knowledge or such ability would not justify a person in attempting to paint a landscape or a portrait to hang in an art gallery with the world's masterpieces.

And so, it appears to me, the occasion that brings us together at this moment demands the effort of a "workman that needeth not to be ashamed" to worthily deal with the subject which has been assigned me. Let me say to you in absolute frankness and in perfect honesty, that I feel totally incapable of measuring up to what you have a right to expect.

But, when your president asked me to undertake this duty there was but one thing to do—accept.

And, if I fail adequately to express the love which we all felt for the man to whose life and labors this memorial is dedicated, let your own full hearts at this moment be the measure of that appreciation, which my poor words must fall short of expressing.

As I tried during the past weeks to think of the exercises in which we were to take part to-day, there came to my mind again and again the words of King David, spoken three thousand years ago, of Abner: "A prince and a great man is fallen." The term "a great man" is frequently heard, and yet, to what a comparatively few men can the words be fitly applied. In law, Moses stands pre-eminent, for the simple reason that the moral law, the Ten Commandments, stands to-day as it stood three thousand five hundred years ago, the very foundation principle of national as well as of individual greatness.

In sociology, the world has seen but one perfect example, the Man of Nazareth. In a few sentences He laid on bed rock the basic principles of ethical relationships between man and man, and between nation and nation, and the violation of these principles by a powerful European nation is the cause of the terrific struggle now convulsing the world. Let me quote just a sentence or two embodying some of His foundation principles:

"Whatsoever ye would that men should do to you, do ye even so unto them likewise." "I came not to be ministered unto, but to minister." "Let him that would come after me deny himself." "He that loseth his life shall find it, shall keep it unto life eternal."

Read to-day the biography of the world's great men and you will find a striking similarity in life and thought and purpose in all of them. What man or woman can possibly attain to greatness and persistently violate any one of the Ten Commandments? Would you call any man great who would attempt to deal with his fellow man as he would not wish a fellow man to deal with him? Could a man, by any stretch of imagination, be called great who was always receiving the ministrations of others in selfish enjoyment? What man to-day has the greatest chance of being classed with the world's great men? Is it not the man who has learned most perfectly the lesson of self-denial?

In the world's great cataclysm at the present time, who are the men whose names and whose memories are being enshrined in the hearts of all right thinking persons? Are they not the men who are losing their lives in order that national and individual lives may find a chance to express themselves along God-given lines.

And was it not along the lines that I have just indicated

that the life of the man whose memory we have met to honor found expression?

Think of the work accomplished in a single life time. It was fundamental in character; it was stupendous in volume. When his own operations, as well as the operations of other men, failed, he sought the reason of the failure and the means by which failures might be avoided, and he gave to the profession scientific methods of operation which shall bless humanity while time lasts.

There is a question that must be ringing in the mind of every man here present. It is this: Why is it that men such as Dr. Black are able to accomplish so much, while most of us do so little? Is the difference between such men and the rest of us simply one of mental endowment? Are these men mental giants and the rest of us mental pigmies? No; I think not. What, then, is the reason? Is this the explanation? Only a few men in each generation are capable of sustained effort, and this perhaps is the secret of all true greatness. Longfellow has expressed that thought in these words:

“We have not wings, we cannot soar,
But we have feet to scale and climb,
By slow degrees, by more and more
The cloudy summits of our time.”

“The mighty pyramids of stone
That wedge-like cleave the desert airs,
When nearer seen and better known,
Are but gigantic flights of stairs.”

And is this not the secret of the unparalleled success of him whose memory and whose life work we delight to honor. Do you know that it takes fifteen pages of ordinary magazine size, in very small type, simply to give the titles of Dr. Black's contributions to the profession, of which he was the most distinguished member. The desire to attain to his own full stature must have taken possession of him even in early life.

Some years ago I attended with Dr. Black and a number of other men from Chicago the fiftieth anniversary of the St. Louis Dental Association. At that meeting Dr. Black showed some lantern slides of sections of teeth that he had made years before by hand, with a pen and India ink, before such slides were made by photography, and they were as accurate and almost as delicate as those made by the scientific apparatus now available.

But the books which he wrote, the contributions which he made to so wide a field in science, the teaching he did in a great university, these are not the things that call out to-day this voluntary expression of gratitude and esteem. We admire the ability which enabled him to overcome where smaller men must have met with failure. We acknowledge the debt we owe, because we are able to accomplish things which would have been altogether impossible had he not blazed the pathway to success.

We feel keenly our own lack of attainment when we think of him "in labors more abundant," but we loved him—not for what he did, but for what he was.

Many of the men taking part in this exercise to-day have a mental picture of him as they knew him best. Some will think of him as they met him at professional gatherings, and the outstretched hand, the genial smile, the kindly word, seem to forge again the link that was broken, and they wonder if it can be indeed true that the "silken cord has been loosed." Others, especially the members of faculties from other schools, will have a vision of him in his own school, as the hearty, unassuming welcome was extended. Others, perhaps by far the largest number, will think of him as he walked through the infirmary, dropping a hand on a shoulder here, offering a word of advice there, giving a little help with an operation some other place, and as he did so, many a difficult operation became easier, many a problem was more readily solved, many a down-hearted student felt that a veritable benediction had come "by the laying on of hands."

But why, may I ask, are we to-day dedicating and unveiling a memorial to Dr. Black? Why in all ages and in every country have monuments been raised to great and good men?

"Can storied urn, or animated bust

Back to its mansion call the fleeting breath?

Can honor's voice provoke the silent dust?

Or flattery soothe the dull cold ear of death?"

We all know that this can mean nothing to him who so short a time ago joined the great company of those whom "we have loved long since and lost a while." Why, then, do we do these things?

Two reasons, perhaps, actuate us: The first, to show to the world and to his immediate dear ones that we loved the man, and appreciate the life work fraught with such mo-

mentous importance to all future generations, and in the second place, to inspire others to lead lives devoted as his was to the amelioration of suffering and to the extension of scientific education and individual culture, the only foundation upon which it is possible to rear the superstructure of national and individual greatness, happiness and prosperity.

More than three thousand years ago that greatest of all questions was asked: "If a man die, shall he live again?" It has never been answered as we would answer or prove a proposition in Euclid, so that we might write after the answer, "Which was required to be demonstrated."

But strange, indeed, would be our conception of creation or evolution, whichever you wish, if having ears, there were no songs of birds nor laughter of children, no strains of sweet music nor articulate sounds of loving voices. It would be strange, would it not, if having eyes to see, there were no rosy morns nor glowing sunsets, no green valleys nor snow-capped mountains, no mountain torrent flashing its myriad of crystals in the sun, nor placid lake reflecting back the softened rays of a harvest moon? No "sky and flowers and trees."

So, I believe, that in some way the greatest yearning of the human soul, its capability for love and service and companionship, will be satisfied "when the golden bowl is broken, when the pitcher is broken at the fountain, when the wheel is broken at the cistern, and the spirit returns unto God who gave it."

To have known a man like Dr. Black, to have enjoyed his friendship, to have felt the warmth of his social nature, to have feasted mentally so often and so bounteously on the satisfying mental pabulum of his production, is to intensify and make more real the belief that "when the earthly house of this tabernacle is dissolved we have a building of God, an house not made with hands, eternal in the heavens."

In the Genesis account of creation it is said that God created man in his own image and likeness. It is in the lives of such men as Greene Vardiman Black, that the eternal, the infinite, the loving nature of God is most clearly discernible. In the early ages the passing of such men was spoken of in some such words as these: "Having served his day and generation, he has fallen on sleep."

Could words be truer of any man than of Dr. Black? "Having served his day and generation, full of years and of honor,

loved most by those who knew him best, 'He has fallen on sleep.' " May "a double portion of his spirit" fill our hearts.

Perhaps Dr. Black's philosophy in life—life here, life hereafter—might be summed up in the following words:

"For me to have made one soul,
The better for my birth:
To have added but one flower
To the garden of the earth.

"To have struck one blow for truth,
In the daily fight with lies:
To have done one deed of right
In the face of calumnies.

"To have sown in the souls of men
One thought that will not die,
To have been a link in the chain of life
T'will be Immortality."

Dental Societies

MINUTES OF THE MEETING OF THE DOMINION DENTAL COUNCIL, HELD IN CHICAGO AUGUST 5, 1918

Upon the roll being called the following presented their credentials:

Prince Edward Island—Dr. Jas. Bagnall.

Nova Scotia—Dr. Frank Woodbury.

New Brunswick—Dr. Jas. Magee.

Ontario—Dr. Harry R. Abbott.

Manitoba—Dr. Geo. F. Bush.

Saskatchewan—Dr. W. D. Cowan.

Alberta—Dr. H. F. Whittiker.

British Columbia—Dr. E. C. Jones.

The minutes as adopted September 13th, 1916, were read.

Dr. A. E. Webster, honorary member, reported as present.

Dr. E. C. Jones gave notice of motion from British Columbia. The notice read as follows:

1. That the figures "1905," on page 10, line 4, and page 11, line 2, be struck out, and the following substituted, "Of the year in which any Province enters the Dominion Dental Council."

2. That the figures "1905," on page 11, line 21, and on page 12, line 15, and on page 16, line 21, be struck out, and the following substituted, "one year previous to the year in which any Province enters the Dominion Dental Council."

Moved by Dr. Whittiker, seconded by Dr. Abbott, that the rules be suspended, and that we pass on to the order of motions. Carried.

Moved by Dr. Jones, seconded by Dr. Bush, that the motion of which Dr. Jones had given notice be adopted, and that the constitution be amended accordingly.

Moved in amendment by Dr. Abbott, seconded by Dr. Bush, that a committee consisting of Drs. Woodbury, Jones and Whittiker be appointed to draw up a resolution *re* amendments to the constitution, as proposed by Dr. Jones. Carried.

Moved by Dr. Whittiker, seconded by Dr. Abbott, that we revert to the order "notices of motions." Carried.

Dr. Bush gave notice of a motion which read as follows: "That all those members of the profession who have been

members of the Canadian Army Dental Corps be granted, upon application, the D.D.C. standing, subject to the same conditions regarding character, past history, etc., as class 'C.' "

Dr. Bush also gave notice that he would bring up for discussion the advisability of granting exemption in certain subjects to those holding a Canadian degree of M.D. who may wish to take the D.D.C. examinations.

The secretary submitted a resolution from the Dental Association of Saskatchewan which read as follows: "Resolved by the Saskatchewan Dental Association that class C, sec. 14, of the Dominion Dental Council's constitution be so amended that the following be struck out: 'On the first day of January, 1905, were' and the word 'are' be inserted."

The secretary submitted a communication from Dr. Thornton, head of the dental department of McGill University, asking for recognition of the diploma of that institution. The letter read: "On behalf of the Corporation of McGill University and its graduates and the medical faculty and the English-speaking dentists of the Province of Quebec, I beg to draw your attention to the following facts for the consideration of your honorable body:

1. That the English-speaking dentists have always been heartily in favor of the existence and work of the Dominion Dental Council, and have deplored the fact that the Province of Quebec has not up to the present time seen fit to join with the other Provinces in this movement to make the profession of dentistry Dominion-wide.

2. That the graduates of McGill feel the disability and lack of prestige because of the conditions existing at the present time.

3. That no reciprocity of privileges is possible at the present between Quebec and the other Provinces.

4. That the English-speaking dentists of the Province of Quebec desire, as far as may be, to enter into the relationships established by the existence of the D.D.C.

In order that this may be brought about we pray that your body may, if possible, grant the following:

- (a) That graduates of McGill be permitted to take the D.D.C. examination and enjoy the privileges which the certificate of that body insures.

- (b) That this privilege be granted only after the corporation of the university, the medical faculty, the dental executive and a majority of all living graduates of the department of

dentistry express a desire for such privilege and a willingness to bring about at the earliest possible moment the entrance of the Province of Quebec on the same basis as that governing the other Provinces of the Dominion in the establishment, maintenance and rights of the Dominion Dental Council.

The secretary submitted certain correspondence regarding the establishment of reciprocal relationships with Great Britain.

It was moved by Dr. Whittiker, seconded by Dr. Bush, that the secretary be instructed to continue negotiations with the British authorities *re* reciprocity, and submit same to the executive, who are hereby empowered to conduct negotiations and to call a meeting of the executive if necessary to deal with the situation. Carried.

The secretary submitted his report, together with all of the correspondence mentioned in the report. The report reads as follows:

Since last we met we have held two general, one supplemental and one special examinations.

At the general examination held in 1917 forty-three candidates wrote in 255 subjects. Of these seven failed in 8 subjects; 18 passed at the supplemental examination held in the fall of 1917; three candidates took four subjects. All of these passed. As a result of the two exams. 21 certificates were issued, all Class "A."

At your last session you authorized a special examination, provided a fixed number of candidates wrote. I immediately proceeded to find out whether or not your conditions could be met, and found that there were quite a number in excess of the number specified willing. The examination was therefore held. Twenty-two candidates wrote in 82 subjects, all of them passing. As a result six certificates of qualification were issued.

In the examination just held 54 candidates wrote. I have reason to believe there would have been many more had it not been that all colleges were seemingly late in closing, thus allowing the students very little time in which to make the arrangements necessary for our examination. The 54 candidates wrote on 164 papers. Owing, no doubt, to the postal strike the examiners' returns are not yet in, so I am unable to report the result.

There has been considerable correspondence with British Columbia relative to that Province becoming an agreeing

District under our Constitution. I submit all of the correspondence.

There has also been some correspondence with the Officer Commanding the C.A.D.C., relative to the establishment of reciprocity between Great Britain and Canada. Not having your authority to open negotiations direct with the British Dental Association, I have not done so. The correspondence is submitted for your consideration and instructions.

Two notices of Motion to amend the Constitution have been received. One is from the representative from British Columbia. It is submitted herewith. The other is from the representative from Manitoba. It is also submitted herewith.

Since our last session there have been 10 Class "C" Certificates issued. To one applicant, Dr. De La Harwood, of Edmonton, the \$100 was returned. I promised to submit his case to you, but cannot see any way by which Certificate can be issued to him unless Quebec becomes an agreeing Province. Several others have desired a Class "C," but as they could not quite comply with our requirements I have not urged them to press their claim. Of the ten Class "C" Certificates issued, six were to parties to practise west of the Great Lakes.

The Certificates obtained some ten years ago are now all used. Should any change or material be desired, now would be a good time to make it.

At the recent examination one of the candidates entered his name at the top of each paper. These I removed from all except one which was overlooked. The examiner reported this one to me in making his return. I am satisfied that the candidate had no desire to break the rules, but he did so. The only question is as to whether or not that one paper should be counted.

Some years ago two practitioners by the name of Marrs applied for Class "C" Certificates. They were both found entitled to same, and the usual provisional Certificate was issued upon which registration in Alberta was secured. I now have a statement from one of these brothers saying he has never received his final certificate. In looking up the records I cannot find that I have ever issued this Certificate. The fact that no date is entered upon which the Certificate was issued would indicate that I have been guilty of neglect in this regard. Would recommend that it be now issued and dated as the original Certificate.

On the 2nd of August I received a resolution from the Saskatchewan Dental Association, which I herewith submit for your consideration. On the same date I received from McGill University a letter which is also submitted for your consideration.

Moved by Dr. Cowan, seconded by Dr. Magee, that the Secretary's report be received. Carried.

The Treasurer submitted his report as follows:

"FINANCIAL STATEMENT

"President and Representatives,

"Gentlemen—I submit herewith a copy of the Auditor's Report as at the 9th of March last, which is the latest date it has been possible to make a satisfactory audit. The returns from the recent examinations are not yet all in. Whether this is due to delay on the part of the examiners or whether the returns are held up by the postal strike, I am not prepared to say. It is most probable that these will be in in a few days, and the year's audit which will include the recent examinations can be sent you within a month. At the last audit there was a credit bank balance of \$1,017.20. Since then there has been chequed out \$632.90. The amount since received in fees has been \$1,592.75. All this has been deposited in the bank, leaving a credit balance at this date of \$1,978.25. Bank book is herewith submitted.

"The examiners' fees for the recent examination will approximate \$450.00."

Moved by Dr. Magee, seconded by Dr. Bush, that the Treasurer's report be received. Carried.

Moved by Dr. Magee, seconded by Dr. Bush, that a duplicate certificate be issued to Dr. W. F. Marrs. Carried.

Moved by Dr. Whittiker, seconded by Dr. Magee, that the words "Class 'C'" be removed from the face of the Certificate of Qualification and that the Secretary be instructed to enter the class on the back of the Certificate for the information of the Provincial Registrar, and that a space for the number be added. Carried.

Dr. J. W. Clay presented his resignation as examiner.

Moved by Dr. Abbott, seconded by Dr. Whittiker, that Dr. Clay be asked to withdraw his resignation. Carried.

Moved by Dr. Bush, seconded by Dr. Abbott, that if we meet at the same place as the C.D.A. that then the Executive be instructed to call the meeting two days in advance of the meeting of the C.D.A. Carried.

Dr. Bush then moved the motion referring to the granting of the D.D.C. Certificate to Commissioned Officers of the C.A.D.C. and of which he had given notice.

As each Province now has the right to accept such services as sufficient for a license if it so desires, and inasmuch as the passing of this resolution would necessitate the issuing of certificates to men resident in non-agreeing Districts, it was decided to negative the motion on the following vote:

P.E.I.—No.

N.S.—No.

N.B.—No.

Ont.—No.

Man.—Yes.

Sask.—No.

Alta.—No.

B.C.—No. 7—1. Lost.

Moved by Dr. Magee, seconded by Dr. Jones, that we do now adjourn to meet at 1.30 to-morrow. Carried.

Meeting of the D.D.C., held in Congress Hotel, Chicago, Tuesday, August 6th., 2 p.m. Those present were:

Prince Edward Island—Dr. Bagnall.

Nova Scotia—Dr. Woodbury.

New Brunswick—Dr. Magee.

Ontario—Dr. Abbott.

Manitoba—Dr. Bush.

Saskatchewan—Dr. Cowan.

Alberta—Dr. Whittiker.

British Columbia—Dr. Jones.

Minutes read.

Dr. Thornton, head of dental department, McGill University, being present, it was moved by Dr. Cowan, seconded by Dr. Bush, that Dr. Thornton be granted the privilege of the floor.

Dr. Thornton addressed the council upon the relation of Quebec to the D.D.C., but with special reference to the English-speaking dental practitioners of Quebec.

The reports of special committees being called for the committee appointed to consider the motion made by Dr. Jones presented the following: Dr. Woodbury, chairman, —Your committee begs to report as follows, that we recommend:

1. The adoption of the resolution as proposed by the British Columbia representative.

2. That on January 1st, 1919, the part of sec. 14, pages 11

and 12, relating to class C, the whole of sec. 31 and sec. 19 be struck out.

3. That on January 1st, 1919, the part of sec. 14, page 12, and designated class D, be amended by striking out the following words: "Who on the first day of January, 1905, have not been in practice for ten years, but who were on that date" also, and "those who graduated from Canadian colleges during 1905," also the paragraph designated "note," on page 12.

4. That after January 1st, 1919, sec. 32 be so amended as to include bacteriology and oral surgery.

5. That the location of sec. 19 be changed to immediately follow the section designated class B, page 11, and the designation be "additional requirements to classes A and B." That the words "42 months," also the words "who commence the study of dentistry after January 1st, 1905," be struck out and the following be substituted: "Four academic years of eight months each." Carried.

Moved by Dr. Magee, seconded by Dr. Woodbury, that the report of the committee be adopted and the constitution be amended accordingly.

Prince Edward Island—Yea.

Nova Scotia—Yea.

New Brunswick—Yea.

Ontario—Yea.

Manitoba—Yea.

Saskatchewan—Yea.

Alberta—Yea.

British Columbia—Yea.

Carried unanimously.

Moved by Dr. Cowan, seconded by Dr. Abbott, that the constitution be amended by adding a new clause to read: "Holders of the certificate of qualification shall be permitted to indicate to the public that he is a holder of the said certificate by using the letters D.D.C." On the vote being taken it resulted as follows:

Prince Edward Island—Yea.

Nova Scotia—Yea.

New Brunswick—Yea.

Ontario—Yea.

Manitoba—Yea.

Saskatchewan—Yea.

Alberta—Yea.

British Columbia—Yea.

Carried unanimously.

Moved by Dr. Woodbury, seconded by Dr. Bush, that anæsthetics be taken out of the classification it is now in, and that it be established as a separate subject. 'Carried.

Moved by Dr. Woodbury, seconded by Dr. Whittiker, that the constitution be amended by striking out from the examination classification the words "porcelain" and "inlay" wherever they occur. Carried.

Moved by Dr. Cowan, seconded by Dr. Jones, that Dr. Wm. Stead, of Nelson, B.C., be appointed examiner in anæsthetics. Carried.

The election of officers was then called.

Second ballot: Dr. Bush, 6; Dr. Abbott, 1; Dr. Jones, 1; Dr. Bush declared elected.

First Vice-President—Third ballot: Dr. Whittiker, 2; Dr. Woodbury, 1; Dr. Jones, 1; Dr. Abbott, 5. Dr. Abbott declared elected.

Second Vice-President—Third ballot: Dr. Woodbury, 4; Dr. Bagnall, 1; Dr. Magee, 1; Dr. Jones, 1. Dr. Woodbury elected.

Vote for Secretary—Dr. Cowan, 7; Dr. Whittiker, 1. Dr. Cowan elected.

Moved by Dr. Bush, seconded by Dr. Magee, that the secretary be instructed under the president to acknowledge the letter of Dr. Thornton, advising him of what has been done. Carried.

Moved by Dr. Bush, seconded by Dr. Magee, that the minutes be adopted. Carried.

(Signed) J. S. BAGNALL,
President.

(Signed) W. D. COWAN,
Secretary.

EXAMINATIONS IN DENTISTRY

The following men passed the examinations held in dentistry at the University of Saskatchewan recently: W. V. Rondau, of Assiniboia, a graduate of Laval University; Dr. J. H. Mitchell, of Hamiota, a graduate of Northwestern University; Sergt. J. A. Daw, of Winnipeg, a graduate of Washington University; Dr. E. R. McKay, of Saskatoon, a graduate of Northwestern University; Dr. F. G. Salisbury, of Hanley, graduate of Northwestern University; R. E. Smale, of Regina; Dr. W. R. Wachtler, a graduate of the University of Minnesota.

IMPRESSIONS RECEIVED ON ATTENDING INTERNATIONAL DENTAL CONVENTION

Chicago, Ill., August 5th to 9th, 1918.

St. John, N.B., Aug. 28th, 1918.

To the Editor, DOMINION DENTAL JOURNAL, Toronto, Ont.:

From the viewpoint of an officer in the Canadian Army Dental Corps, the objects which I had in view when I asked permission to attend the International Dental Convention in Chicago very naturally color the impressions I received. I attended with a definite desire, and the extent of my perceptions was controlled entirely by the fact that I could not be in several places at once.

I was first of all impressed with the completeness of detail arrived at by the committee who had in charge arrangements for the comfort and convenience of those of us who went from Canada, and the comprehensive programme compiled.

I was most anxious to secure enlightenment on anything that would further the interests of the C.A.D.C., especially in the district wherein I have the honor to serve, and I am not disappointed.

Especially instructive were the exhibits presented by Capt. Villain, of Paris, France; that presented by Capt. H. S. Thomson, of Military District No. 2, and that of the United States Army Dental School section.

We in Canada have rather prided ourselves on what we have done, and are doing, but our brethren across the line have set such a pace in the matter of organizing schools of instruction in their training camps (following the lead of the French Government under the direction of Capt. Villain), that Canada will have to look to her laurels.

It is intended that all officers rendering dental service shall be instructed thoroughly in the most up-to-date methods of treating injuries of the face and jaws.

While wearing the King's uniform, it has been a great privilege to me to attend the convention.

The stupendous magnitude of the attendance fairly overpowers one. Just think—over 7,000 practising dental surgeons—but the whole thing can only be appreciated, and a proper perspective arrived at by deliberate and calm reflection following our return home.

The thing which impresses one most of all, however, is the

thoroughness with which the dental profession of the United States have entered into their work for the purpose of prosecuting this war to a successful issue, and what lends significant emphasis is the fact that the president of the National Dental Association, Colonel Logan, is the chief advisory dental officer to the United States Government, while the newly elected president is Major Vignes, Inspector-General of Dental Services. Every man is heart and soul supporting the man who wears the uniform.

I might elaborate at great length upon the relative advantages to the profession from an army dental corps administered either by a member of the dental profession responsible directly to the Minister of Militia, or one administered by a member of the profession reporting to his superior officer in the Army Medical Service, but excepting the impression received when comparing the two systems I will not dilate.

The impression that the Canadian service is the more satisfactory was emphasized by the remark of the Inspector-General of Dental Services in the United States Army Dental Corps, that delays in carrying out suggested improvements were often incurred by reason of the fact that they had to go through the hands of a superior officer who was slow to recognize their vital importance.

This does not mean that there is any friction, because there appears to be the greatest harmony between the chief administrative medical officer in the United States Army and his chief adviser in the Dental Corps.

There can be no question about the earnestness with which the right thinking people of the United States are assuming their war burdens, and as they are very largely in the majority, it may safely be said that all are enthusiastically supporting the war administration.

J. M. M.

OFFICERS OF THE NEW BRUNSWICK DENTAL SOCIETY

President—Dr. H. W. Snow, Sackville.

Vice-President—Dr. L. A. Langstroth, St. John.

Secretary—Dr. F. A. Godsoe.

Council of Dental Surgeons of N.B.—President, Dr. W. P. Broderick; Registrar, Dr. F. A. Godsoe.

Board of Examiners—Dr. F. C. Bonnell, Dr. F. E. Burden and W. J. S. Myles.

MINUTES OF THE EXECUTIVE AND GENERAL
SESSIONS OF THE C. D. A., CHICAGO, ILL.
AUGUST, 1918

Minutes of C.D.A. Executive meeting, Green Room, Congress Hotel, Chicago, August 5th, 11 a.m.:

Present: Drs. Nolin, Woodbury, Merkley, Bradley and Capt. H. S. Thomson.

The programme was outlined and prepared for the printer.

The president appointed the following Nomination Committee: Dr. Dubeau, Quebec, chairman and convener; Dr. H. R. Abbott, Ontario; Dr. Bush, Manitoba; Major Cowan, Saskatchewan; Dr. Milton Jones, British Columbia; Dr. Whitaker, Alberta; Major Magee, New Brunswick; Capt. G. K. Thomson, Nova Scotia, and Dr. Bagnall, Prince Edward Island.

Dr. Woodbury moved, seconded by Dr. Bradley, that C.A. D.C. men and officers be admitted to full privileges of all sessions and clinics without payment of the fee. Carried.

Moved by Dr. Woodbury, seconded by Capt. H. S. Thomson, that the constitution as revised by the committee be adopted, and that the incoming executive have power to prepare by-laws in accordance with this revised constitution. Carried.

GENERAL SESSION.

Minutes of the first regular business session of the Canadian Dental Association, held in Green Room, Congress Hotel, Chicago, Monday, August 5th, 1918, at 2.30 p.m.:

The president in the chair.

Moved by Dr. O. A. Marshall, seconded by Dr. T. F. Campbell, that the minutes of the previous meeting be taken as read. Carried.

The president then read his address, Dr. A. W. Thornton in the chair.

Dr. Conboy moved that it be received and entered in the printed minutes. Seconded by Major Green, Ottawa. Carried.

Major Green eulogized Dr. Villain's work in dental surgical prosthesis.

Dr. Thornton said he was very glad we were to have the opportunity to hear Dr. Villain, and proposed that the C.D.A. put itself on record as favoring the sending of Canadian dental teachers to French and English hospitals to learn war dental prosthesis.

Dr. Dubeau favored this idea, and proposed we see our Canadian Government concerning it. He commended Dr. Villain's work, and spoke of Dr. D'Argent, who visited our last meeting in Montreal, saying he regretted that Dr. D'Argent had passed away during the preceding month.

The matter of sending dental teachers and C.A.D.C. men overseas for instruction was discussed further by Drs. Nolin, Webster, Thornton, A. H. Allen, Capt. Thomson, Dr. Secombe, Dr. McDonagh, Major Green and Dr. Conboy.

The president named Drs. Thornton, A. E. Webster, Dubeau, Capt. H. S. Thomson and Major Green a committee to frame a motion to present to the Government. An outline of this motion presented was as follows:

1. That this association desires to place on record its appreciation of the action of the Canadian Government in making permanent the establishment of the C.A.D.C. as a unit in the military force of Canada.

2. That in view of the many changes brought about by the exigencies of the war, necessitating methods of dentistry not known or practised heretofore, and realizing that such necessary appliances and dental operations as have already been made may in time have to be repaired, or entirely replaced, or new appliances adopted,

3. That we are very decidedly of the opinion that our Government should appoint a number of Canadian dentists to proceed overseas to study the methods of practice now in use in the dental hospitals overseas, and that such men should be chosen from men now in the Army Dental Corps and from the teaching staffs of the Canadian dental schools.

4. Resolved further, that a committee be appointed by this association to suggest the names of men best suited for such a mission.

This was further discussed by the members.

Dr. Nolin (Dr. Woodbury in the chair) moved that the principle of the resolution be adopted, and that it be referred back to the original committee.

Dr. McDonagh suggested adding Col. Hume's name to this committee. Dr. Nolin agreed to this.

Dr. Secombe seconded Dr. Nolin's motion. Carried.

The president then announced the Nomination Committee as chosen at the executive meeting.

Dr. Geo. Grieve read the report of the Educational Committee.

Moved by Dr. W. E. Willmott, seconded by Dr. H. W. Black, that this report be received, and that the committee be re-appointed. Carried.

Dr. A. E. Webster read the report of the Committee on Reorganizing the Constitution, and read the new constitution.

Dr. Webster moved the adoption of this constitution, and that the Executive Committee prepare by-laws to conform to it before our next meeting. Motion seconded by Dr. W. E. Willmott.

It was agreed that Drs. Bush, Willmott, Webster and McDonagh should remain on the committee to devise by-laws until these were outlined and accepted at our next biennial meeting.

Dr. Wallace Seccombe then read the report of the Research Committee. Dr. Seccombe moved its adoption, and suggested that the executive of the C.D.A. name which of the provincial committees shall act as the executive of the Research Committee until the next meeting of the C.D.A. Seconded by Dr. Conboy. Carried.

The secretary-treasurer read his report, stating there was a balance on hand of \$597.61 from the 1916 meeting in Montreal, and moved its adoption. Dr. McDonagh seconded. Carried.

Dr. McDonagh spoke concerning the remuneration of the Army Dental Corps officers as compared with that of the Army Medical Corps, and moved that a committee be appointed to look into prevailing conditions, and if found as reported, that steps be taken to consult with the proper military authorities concerning their remedy. Dr. Conboy seconded this motion. Carried.

Dr. Nolin said he would appoint a committee later.

It was moved by Dr. Dubeau, seconded by Major W. R. Green, that communications expressing our appreciation be sent to the Government of France for sending Dr. Villain to address us, and to the Canadian military authorities for allowing Col. Hume to return to tell us of his work in the dental hospitals of England. Carried.

Moved by Dr. Bradley, seconded by Dr. Grieve, that a competent stenographer be secured to report the proceedings of our next meeting. Carried.

Moved by Dr. McDonagh, seconded by Dr. Conboy, that we adjourn. Carried.

Minutes of Executive meeting, held in Green Room, Congress Hotel, Wednesday, August 7th, at 11.30 a.m.:

Present: Drs. Woodbury, Bagnall, De Guise, Seccombe and Bradley.

The president appointed Dr. Junvet and Major Green as his representatives on the local Ottawa committee, they to appoint three others.

Dr. De Guise moved, seconded by Dr. Bagnall, that Dr. Bradley act as secretary for this meeting. Carried.

Moved by Dr. Bagnall, seconded by Dr. Bradley, that Drs. Junvet, Green and DeGuise be the financial committee until our next meeting. Carried.

Moved by Dr. Bagnall, seconded by Dr. De Guise that the following bills be paid: Dr. Nolin, stenographer while in Chicago, \$14.25; Miss M. Faith, clerical assistance to the secretary-treasurer, \$20. Carried.

Moved by Dr. Bagnall, seconded by Dr. De Guise, that all outstanding bills be O.K.'d by the president, paid, and that Drs. Green and Junvet audit the books. Carried.

Moved by Dr. De Guise, seconded by Dr. Bagnall, that the secretary-treasurer transact his banking business through the Bank of Ottawa, Ottawa. Carried.

Dr. Seccombe spoke on the Research Committee's work.

It was moved by Dr. Bagnall, seconded by Dr. De Guise, that the Ontario committee be appointed the Executive Committee for the Dental Research Committee of the Canadian Dental Association till our next meeting. Carried.

Meeting adjourned at 1 p.m.

Minutes of the Second Business Session of the C.D.A., held Wednesday, August 7th, at 10 a.m., Dr. Nolin, President, in the chair.

THE PRESIDENT: I take great pleasure in announcing to the Canadian Dental Association that we are to have with us this morning as a visitor, Dr. Villain, Paris, France. We shall have the pleasure of meeting him in a few minutes.

The standing of dentists in the French army would be a disappointment to us who have had so many privileges granted. Dr. Villain's standing, probably as high as any man can desire in the profession, is undeniable; still the highest grade of any French dentist in the army is that of adjutant, which just allows a man to go with the officers.

Those men must have our admiration, nothing to hope for and no recompense,—they have been doing hard work, which from a scientific point of view is simply wonderful.

When given the mission to represent the French Government, he was told to wait a few days when he would receive the rank of Captain. He had either to delay his coming, or come without the rank, so he preferred to be with us and left the rank behind him.

The minutes of the last business session were read by the secretary. Approved.

The following was the report of the Nomination Committee read by Dr. Dubeau; For President, Dr. Frank Woodbury, Halifax, N.S.; For Vice-President, Dr. H. F. Whittiker, Edmonton, Alberta; Sec.-Treas., Sydney W. Bradley, Ottawa, Ontario. Executive: Dr. E. C. Jones, New Westminster, B.C.; Dr. Sylvester Moyer, Rose Town, Sask.; Dr. H. I. Merkley, Winnipeg, Man.; Dr. F. E. Burden, Moncton, N.B.; Dr. L. De Guise, Montreal, Que.; Dr. J. S. Bagnall, Charlottetown, P.E.I.

THE PRESIDENT: You have heard the report of the Nomination Committee.

Dr. Dubeau moved, seconded by Major Cowan, that this report be received and adopted. Carried.

Moved by Dr. W. E. Willmott that the Secretary cast a ballot for the officers named, seconded by Dr. H. W. Black. Carried.

The Secretary read a letter from Dr. Clay saying he regretted his inability to be present, and also a telegram from Dr. Moyer, saying his son, invalided home, was expected any day and he could not be present.

DR. A. W. THORNTON: In regard to the representation to the Government, I have a resolution to offer that will perhaps cover the ground. I move that the matter be left by this meeting to a committee with power to act; that committee to consist of the heads of the dental departments of the Canadian schools, with an equal number of officers—commanding officers of districts of the Canadian Army Dental Corps, and in addition, Col. Hume and Major Green. I think in that way we will solve the difficulty, and they can appoint a special committee or do anything they wish with regard to the question.

THE PRESIDENT: You have heard the report made by Dr. Thornton, seconded by Dr. Dubeau. Is there any discussion? Are you ready for the question? Carried.

The Secretary then read Dr. McDonagh's motion with regard to remuneration of dental officers in the army.

The President appointed Col. Thompson, Major Cowan and Drs. De Guise, Webster and McDonagh a committee

to consider the motion. Col. Thompson and Major Cowan did not act, and the President appointed Drs. Seccombe and V. Olivier in their stead.

DR. H. R. ABBOTT: I don't think the military authorities will take any dictation from outside persons. The army medical men are very much dissatisfied, and it is being worked out by the military authorities. They would turn you down if you tried to dictate to them what they should do.

DR. A. E. WEBSTER: We are civilians, and we vote. It is our money. They are our representatives and they will listen to us. If they do not we can have other representatives. As for the army officers, I will accept it all as far as they are concerned, if the army officers could go to the civil authorities and discuss it.

The Secretary then read the names of the new Executive Committee for the ensuing two years.

DR. NOLIN: It is my pleasure to declare these gentlemen elected, and to congratulate the Association on having for the next two years such a distinguished man for its president as Dr. Frank Woodbury.

As soon as this meeting is over, the new Executive will kindly meet and begin their work of organization for our next meeting. If there be no further business, I think it is the right moment to propose a resolution of thanks. I shall appoint Dr. Willmott and Dr. Bush a committee to draw up such resolutions.

DR. BUSH: Our Secretary gets very little out of this meeting except work. I would move that he be reimbursed for his actual expenses in coming to this meeting. I think it is the least we can do.

Seconded by Dr. Seccombe.

THE SECRETARY: Such a motion is not necessary. I have enjoyed the meeting very much and do not want or expect any remuneration.

THE PRESIDENT: The Secretary has not a word to say until the motion is put. You have heard the motion. All in favor? Carried.

The motion is adopted and the Secretary is ordered to enter it in the minutes.

Dr. Villain then entered the room and was introduced by Dr. Nolin.

DR. NOLIN: Gentlemen, it affords me much pleasure to present to the Canadian Dental Association the official repre-

sentative of the French Government to our Congress, and also to the National Dental Association.

Dr. Villain, in the name of the Canadian Dental Association, I bid you a most sincere welcome among us. We thank you for coming, and the French Government for the courtesy it has shown in sending you, and we hope that your stay among us will allow you to bring back to France the message that you have met here hearts who love your country and who love the sacred cause of the Allies.

DR. VILLAIN: Mr. President and Gentlemen,—I have pleasure in coming, and all the honor is for me. I was pleased when the French Government asked me to come to your meeting. It has been a great honor conferred upon me, and I shall do my best to live up to it, but you must excuse my poor English. I will have the opportunity to show you the work we are carrying on in the French army. I brought some small models, because I had but a short time to make ready, but I expect I shall be able to show you some of the wonderful work. It is not always an easy task, I can tell you.

THE PRESIDENT: To-morrow morning at the clinics, Dr. Villain will show his models and give clinics, explaining the work they have been doing in France.

A MEMBER: Three cheers for the French army! These were heartily given by the members.

DR. NOLIN: Is the committee on Dr. McDonagh's motion ready to report?

DR. McDONAGH: Your committee recommends that the Canadian Dental Association make representation to the Government for an increase of pay to the Canadian Army Dental Corps officers.

DR. WEBSTER: I second that motion. Carried.

DR. WILLMOTT: Mr. President, the Resolution Committee presents the following:

The Canadian Dental Association desires to place on record its appreciation of the kindness extended by the officers of the National Dental Association in inviting it to be their guests at this meeting, and to express its sincere thanks for the courtesies and privileges extended.

The joint meeting of these two associations in Chicago will long be remembered as one of the most pleasant and profitable meetings this association has ever held. It is particularly appreciated at this time, when our members are fighting side by side with the dentists in the two armies, and the practitioners of the two nations have this opportunity of

meeting together and discussing matters of equal interest to both.

That a copy of this resolution be sent to the National Dental Association also.

That the thanks of the association be presented to the officers and the Executive Committee for their work during the past two years.

I move the adoption of this report.

DR. BUSH: I second it. Carried.

THE PRESIDENT: If there is no further business we shall proceed with the installation of the new officers.

DR. WOODBURY, in taking the chair, said:

Gentlemen of the Canadian Dental Association,—I feel deeply the honor you have conferred upon me. I am getting to be one of the oldest members, and this, probably the final honor, is the greatest that I have ever received. I have gone through all the offices of my Province. In 1898 I was the first honorary member of the National Dental Association. I have been three times elected as a member of the Dominion Dental Council. I tell you now frankly, I consider this the greatest honor of all.

In electing me president of this association, I just want to say that I am president of the Canadian Dental Association from Cape Breton to Victoria. Thank you very much. I will not detain you longer.

PRESIDENT WOODBURY: I would like to have Dr. Nolin and Dr. Seccombe meet with us in the executive meeting held immediately after this session. Is there any further business? Would it not be wise, since we have adopted our new constitution, that we should decide now where we will meet next time?

MAJOR GREEN: It is a long time since this association met in Ottawa. I think it is time we met there again. On behalf of the Ottawa Dental Society I would be very glad to extend an invitation to the Canadian Dental Association to meet in Ottawa at its next biennial meeting. I move that this association meet in Ottawa at its next meeting. The last time we had our meeting there we had a mighty good convention.

MAJOR COWAN: I have very kindly remembrances of our meeting in Ottawa several years ago; it is a delightful city—but has one drawback. It is the meeting-place of the politicians who belong to Parliament. I second Major Green's motion.

DR. NOLIN: The outgoing executive had thought of having this meeting in Ottawa when we received the invitation of the National Association to come to Chicago. It seemed the unanimous idea that to draw a large meeting Ottawa is probably the best meeting place in Canada, and it is right in the centre of the largest population.

PRESIDENT WOODBURY: You have heard the resolution of Major Green, seconded by Major Cowan, that our next meeting be at Ottawa. All in favor? Contrary? Carried. Ottawa, then, will be the meeting place of the 1920 meeting.

PRESIDENT WOODBURY: It has been moved and seconded that the minutes of this meeting be referred to the Executive Committee for approval and publication. All in favor? Carried.

DR. BUSH: Before we adjourn I wish to move a special vote of thanks to the secretary. He has combined courtesy with ability in his work, and I therefore move that a vote of thanks be extended for his last two years' work—and I believe he is going to take it for two years more.

PRESIDENT WOODBURY: All in favor of the secretary receiving a second vote of thanks? Carried.

THE SECRETARY: Mr. President and Gentlemen,—I am sure I do not deserve a second vote of thanks. I think it is only the duty of the secretary to do those things when he has been appointed to do them. When Dr. Coghlin went overseas some one sent me a parcel of Canadian Dental Association books and papers. I think it was Dr. Webster who started me in this work. I looked over the books, but it was a new proposition, and I didn't know much about the work.

Personally, I think the secretary should remain in office for three or four or five meetings, because to change it from meeting to meeting means he does not know much about what has been done. I feel that I can help with the Ottawa meeting very much more than if I were just a new secretary. I am sure we shall have a good meeting in Ottawa, because the dentists there are all good fellows, and will work to make the 1920 meeting one of the best. I thank you very much, gentlemen.

The meeting closed by singing "The Marseillaise" and "God Save the King."

D. D. C. EXAMINATIONS, 1918

The following have passed in Operative and Prosthetic Dentistry (papers): Adamson, Henderson, Jones, Lebbetter, McCuaig, MacSheldon, Stultz, Sproule, Thompson, Young.

Prosthetic Dentistry only (paper): Laidlaw.

The following have passed in Operative and Prosthetic (clinical): Adamson, Henderson, Humphrey, Jones, Lebbetter, MacSheldon, Stultz, Sproule, Young.

The following have passed in Bacteriology: Aitken, Blondin, Flett, Hall, Hartford, Oke, Ott, Poyntz, Pickard, Richardson.

The following have passed in Medicine, Surgery and Anæsthetics: Adamson, Henderson, Jones, McCuaig, MacSheldon, Stultz, Sproule, Thompson, Young.

The following have passed in Metallurgy: Aitken, Oke.

The following have passed in Jurisprudence and Ethics: Adamson, Henderson, Jones, McCuaig, MacSheldon, Stultz, Sproule, Thompson, Young.

The following have passed in Physics and Chemistry: Carrothers, Clermont, Chegwin, Coyst, Day, Fitzpatrick, Hillis, Jones, Milne, Mackenzie, Oke, Palmer, Ross, MacSheldon, Shortreed, Thomas.

The following have passed in Physiology and Histology: Aitken, Benrzza, Countryman, Carrothers, Clermont, Chegwin, Coyst, Day, Fraluk, Fitzpatrick, Griffin, Germeroy, Hillis, Hughes, Jones, Morrison, Wm. Mitchell, Milne, McLachlan, Oke, Ott, Palmer, Ross, MacSheldon, Strath, Sproule and Thomas.

The following have passed in Anatomy: Aitken, Countryman, Carrothers, Clemence, Clermont, Chegwin, Coyst, Day, Fraluk, Fitzpatrick, Griffin, Green, Germeroy, Hesson, Hall, Hillis, Hughes, Jones, Morrison, Murray, Wm. Mitchell, G. F. Mitchell, Milne, McLachlan, Macleod, Oke, Ott, Poyntz, Palmer, Pickard, Quigley, Ross, MacSheldon, Thomas.

The following have passed in Materia Medica and Therapeutics: Aitken, Blondin, Carrothers, Chegwin, Clemence, Dimock, Flett, Hall, Henderson, Hartford, Jones, Laidlaw, Murray, Mackenzie, Oke, Ott, Poyntz, Pickard, Quigley, Richardson, MacSheldon, Shortreed, Sproule, Thomas, Wood, Young.

The following have passed in Pathology and Bacteriology: Carrothers, Chegwin, Dimock, Henderson, Jones, Laidlaw, Lebbetter, Murray, Mackenzie, Quigley, MacSheldon, Sproule, Thomas, Young.

The following have passed in Orthodontia: Adamson, Henderson, Jones, Lebbetter, McCuaig, MacSheldon, Stultz, Sproule, Thompson, Young.

DOMINION DENTAL COUNCIL

DR. EMERY JONES, B.C.

The Dominion Dental Council held its bi-annual meeting on August 5th, in the Congress Hall, Chicago. The Canadian Dental Association met in conjunction with the National Dental Association, and the D.D.C. sessions were held at the same time. All agreeing Provinces sent delegates, and for the first time British Columbia was represented.

It was the unanimous opinion of the council that certain amendments should be made to the constitution. For several years many objections have been made to registration under Class C, whereby certificates of qualification have been granted without any examination or test of efficiency. As a result of this ever growing sentiment against this class, the council decided to grant no more Class C certificates after the end of the present year. Any dentists wishing to avail themselves of that privilege must be registered within that time.

The council was also faced with the difficulty of giving justice to the large preponderance of American graduates in British Columbia, and most of the Provinces, except Ontario. Under the constitution it was not possible for an American graduate since 1906 to even try the D.D.C. examination, no matter how competent he might be, or how high in the profession he might stand. It was felt by the council that this was an injustice. The constitution was therefore so amended that all those who are holders of valid and unforfeited certificates in any of the Provinces entering into the agreement, registered in some Province, and have been in regular, legal, ethical practice in Canada for at least five years prior to the date of application for examination, and who produce satisfactory evidence of good moral character, shall have the opportunity of trying the modified examination, known as Class D, and if successful shall be granted the certificate.


The constitution was also so amended as to give those registered in British Columbia when she became an agreeing Province the same opportunity of obtaining Class C certificate as the other Provinces had when they entered.

It is believed that these changes will raise the standard of education set by the Dominion Dental examination, and that the profession and the public in the several Provinces will approve of the efforts of their representatives, to make the D.D.C. certificate not only a standard in Canada, but also one that may soon be accepted by the whole of Great Britain and her colonies.

DENTISTS IN ATTENDANCE AT THE CANADIAN DENTAL ASSOCIATION MEETING CHICAGO, AUGUST, 1918

Those in attendance at the C.D.A. meeting in Chicago, August 5-9, 1918: J. Frank Adams, Toronto, Ont.; Harry R. Abbott, London, Ont.; A. H. Allen, Paisley, Ont.; E. E. Bruce, Kincardine, Ont.; S. W. Bradley, Ottawa, Ont.; Major F. H. Bradley, Sherbrooke, Que.; H. W. Black, Sydney, N.S.; J. S. Baynall, Charlottetown, P.E.I.; C. E. Biehn, Chesley, Ont.; H. Bannerman, Owen Sound, Ont.; M. Bowles, Winnipeg, Man.; G. F. Bush, Winnipeg, Man.; H. K. Box, Toronto, Ont.; J. A. Bothwell, Toronto, Ont.; H. E. Bewell, Dauphin, Man.; Capt. J. B. Brown, Charlottetown, P.E.I.; R. H. Cosgrove, Ottawa, Ont.; T. F. Campbell, Galt, Ont.; A. J. Courtice, Winnipeg, Man.; Major W. D. Cowan, Regina, Sask.; J. J. Craig, Bowmanville, Ont.; Ernest Charron, Montreal, Que.; F. J. Conboy, Toronto, Ont.; W. L. Chalmers, Alexandria, Ont.; Capt. D. W. Canning, Hamilton, Ont.; W. E. Cummer, Toronto, Ont.; Lieut.-Col. W. B. Clayton, Ottawa, Ont.; A. D. Delorme, Montreal, Que.; J. M. Dixon, Medicine Hat, Alberta; E. Dubeau, Montreal, Que.; W. Dalzell, Portage la Prairie, Man.; L. De Guine, Montreal, Que.; Capt. R. W. Emerson, Toronto, Ont.; G. V. Fisk, Toronto, Ont.; J. H. Gray, Hamilton, Ont.; Major W. R. Green, Ottawa, Ont.; W. J. Giles, Montreal, Que.; Geo. W. Grieve, Toronto, Ont.; M. H. Garvin, Winnipeg, Man.; H. A. Holmes, Toronto, Ont.; Lieut. H. M. Halperin, Valcartier, Que.; Lieut.-Col. Guy Hume, Toronto, Ont.; H. Irvine, Lindsay, Ont.; W. T. Jeffs, Dresden, Ont.; E. C. Jones, New Westminster, B.C.; Hector Julien, Montreal, Que.; J. E. Johnston, Hamilton, Ont.; J. S. L. Joncas, Winnipeg, Man.; J. M. Jones, Vancouver, B.C.; C. C. Jeffrey, Winnipeg, Man.; R. C. Jones, Melita, Man.; H. C. Jeffrey, Winnipeg, Man.; M. Katz, Toronto, Ont.; J. A. Locheed, Hamilton, Ont.; D. G. Leckie, Winnipeg, Man.; E. Lapointe, Montreal, Que.; T. L.

Larseneur, Montreal, Que.; O. A. Marshall, Belleville, Ont.; H. N. Maranda, Ottawa, Ont.; Oliver Martin, Ottawa, Ont.; H. J. Merkley, Winnipeg, Man.; Capt. W. S. Madill, Toronto, Ont.; G. K. Mills, Tilbury, Ont.; Major Jas. M. Magee, St. John, N.B.; J. R. McGregor, Elora, Ont.; J. S. McDougall, Winnipeg, Man.; A. J. McDonagh, Toronto, Ont.; C. S. McComb, Port Arthur, Ont.; H. A. McKim, Toronto, Ont.; Jos. Nolin, Montreal, Que.; V. H. Olivier, Sherbrooke, Que.; E. W. Paul, Toronto, Ont.; W. A. Pipus, Calgary, Alberta; J. M. Parson, Winnipeg, Man.; C. A. Powers, Brandon, Man.; H. G. Robb, Calgary, Alberta; J. E. Rhind, Toronto, Ont.; F. Ryan, Toronto, Ont.; Capt. H. Ross, Regina, Sask.; G. F. Roulston, Exeter, Ont.; W. D. Ramore, Port Arthur, Ont.; H. R. Risinger, Winnipeg, Man.; R. M. Riggs, Claresholm, Alberta; H. A. Robertson, Hamilton, Ont.; S. B. Ritner, Gravelbourg, Sask.; J. A. Slade, Toronto, Ont.; J. F. Simpson, Trenton, Ont.; C. A. Snell, Toronto, Ont.; C. N. Simpson, Port Arthur, Ont.; W. Seccombe, Toronto, Ont.; W. B. Shantz, Kitchener, Ont.; W. G. L. Spaulding, Toronto, Ont.; B. W. Snipes, Vancouver, B.C.; W. C. Smith, Toronto, Ont.; J. M. Stewart, Hamilton, Ont.; F. K. Switzer, Saskatoon, Sask.; F. N. Sangster, Sarnia, Ont.; Capt. H. S. Thomson, Toronto, Ont.; A. W. Thornton, Montreal, Que.; Major G. K. Thomson, Halifax, N.S.; Lieut.-Col. W. G. Thompson, Hamilton, Ont.; Leslie Wright, Calgary, Alberta; Frank Woodbury, Halifax, N.S.; A. E. Webster, Toronto, Ont.; W. E. Willmott, Toronto, Ont.; H. F. Whittaker, Edmonton, Alberta; H. G. Wilkinson, St. Mary's, Ont.; Geo. C. J. Walker, Dauphin, Man.; C. H. Weagant, Winnipeg, Man.



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BROADEN THE OUTLOOK

Each year the dental journals of Great Britain publish a students' supplement, or an outline of how to enter dentistry in Great Britain. There is little or no change in the regulations from year to year. Certain colonial universities are recognized, but never any in Canada. So far as Canada is concerned official dentistry in Great Britain does not recognize its existence. It is no fault of Great Britain, but the fault of Canadian dentistry. Canadian dentists and Canadian dentistry are too self-satisfied. If an average Canadian dentist were asked if the standard of dentistry in South America was the equal of that of their own, the answer would be at once no, while as a matter of fact dentistry in the most of the South American countries is of the very highest character. There is published in Buenos Aires a monthly magazine of over two hundred pages of reading matter, beautifully illustrated, splendid paper, and less than ten pages of advertising. It is the most expensively gotten up monthly dental publication in existence, and must be supported by the dental profession alone. Dentistry in North America, or in Europe, has

nothing its equal in point of size, type, printing, illustrations or original matter. Being perfectly satisfied with oneself leads to a kind of happiness, and perhaps to a long life, but it never was the purpose of the Creator that we should not make progress. If Great Britain doesn't know that there is an organized dental profession in Canada, and that there are four good dental colleges, then it is time that Canada should branch out and let it be known. It isn't enough to be in touch with dentistry to the immediate south of us, because they may not know it all. Dentistry in Canada is provincial, and the nearer to the centre of the country one approaches the more provincial it becomes. Nothing will remove this provincialism until there is organized a live national association or council with a mouthpiece, and the Province of Quebec joins with the D.D.C., so that there may be one official national legislative body. These bodies in themselves will never be of any influence unless someone is willing to make a little sacrifice and the profession unites for the sake of dentistry and the country.

ARMY DENTIST ON WHEELS

The old saying was that an army travels on its stomach. So it does; but it cannot travel far without good teeth.

That the fighting man's teeth shall be in good condition (in order that he may properly masticate his food) is now recognized as one of the most important things to be considered in the conduct of military operations.

Hence the "dental ambulance," which is an entirely new thing in warfare. It is a dentist's office (or workshop) on wheels—an automobile specially built to contain such an outfit, which is thereby rendered readily transportable.

The British originated the idea. They have one such perambulating dentist's office for each division (15,000 or 20,000 men) of troops. The United States Department proposes to put into the field a dental ambulance for every regiment.

The dental ambulance is a marvel of compact completeness. Though occupying only the space available in the covered body of an ordinary automobile, it is better equipped than nine out of ten ordinary dental offices.

ALL THE NECESSARIES.

It has the customary operating chair, a wall-case with many drawers for instruments, tanks of "laughing-gas,"

acetylene lamps for illumination, an oil stove, hot and cold water, a water tank (cylindrical at the forward end) and all the other necessities.

But this description affords only an imperfect notion of the conveniences available. Attached to the sides of the vehicle and folding compactly up against it when not in use, are two arrangements of khaki canvas that, when wanted, expand into pen-roofed wall-tents, each of them equal in size to the quarters available inside the automobile body.

Thus, in a few minutes, the covered space available can be multiplied by three. One of the tents is meant to afford sleeping accommodations for the dentist and his assistant; the other is available as a supplementary dental operating room.

All of the equipments for the latter are stowed while traveling from place to place, in the front end of the automobile. They are made so as to be collapsible. The operating chair collapses; the little engine folds up. From about three cubic feet of space (in the motor car) are taken and expanded all the essentials of a dental office.

EXPANDS INTO THREE ROOMS.

Accordingly, when the two tents have been thrown out at the sides, the whole affair has the aspect of three substantial buildings, with a second operating room in one wing and a dormitory in the other. For the chauffeur his seat up in front of the vehicle is so contrived as to be readily convertible into a comfortable bed if desired, and his couch can be made weather-proof by a mere shutting of glass doors and windows.

It is perhaps worth while to add that one of the appurtenances of the dental ambulance is a small bookcase containing a few standard and encyclopedic works on dentistry, for ready reference. Also that the car, when stationary, is made perfectly level and immovable by putting one or two "jacks" under its corners. At the same time a flight of three adjustable steps is let down from its rear end, up which soldier patients may conveniently walk to enter the dentist's office.

Special dental tribunals have been formed in England. Every registered dentist up to the age of fifty-one is conscripted. The tribunal is to decide in what branch of the service he is to serve—army, navy, air service, school service. After these are supplied civil wants will come next, distributing those remaining where most needed.

Editorial Notes

Dr. Fletcher has opened an office at Peace River, Alta.



Dr. Budd Keeley, Vancouver, has been visiting Anyox in his professional capacity.



A dental clinic has been recommended for the New Westminster, B.C., schools.



The C.A.D.C. overseas is coming into a good deal of commendation for its efficiency.



The Preparedness League of American dentists have performed a million dental operations for soldiers free of charge.



There are just twice as many dentists in the whole British army as there are in the Canadian Army Dental Corps overseas.



The most important newspapers and magazines are now showing an intense interest in dentistry as it is practised in the army.



The Saskatchewan "Post" contains a very readable article on "Legislative Dentistry in Canada." Such articles should appear from time to time in all of our papers, so that the public would have a better knowledge of professional education.



Drs. Sanders and Doran, Brandon, have each been relieved of about a hundred dollars worth of gold. It is not the ordinary around town thief who steals gold from a dental office. It is practically always some one who has an intimate knowledge of dental offices.

Correspondence

RADIO-LUCENCY OF GUTTA-PERCHA

Chicago, August 7, 1918.

Dear Dr. Webster,—In reference to the article in the last number of the *JOURNAL*, *re* the radio-lucency of gutta-percha, I shall like to comment. The problem is so simple I hesitate to refer to it, but since there are pros and cons, it may be advisable to do so.

We know that metals and certain metallic salts are opaque to the X-ray, while gums and certain other solutions are radio-lucent. Now this is the simple solution of the problem: Dissolve the gutta-percha in chloroform and let stand. The supernatant liquid carrying, as it does, the more or less pure gutta-percha, will be radio-lucent to varying degrees, depending on the solubility or insolubility of the ingredients in the particular compound of gutta-percha used.

The metallic salts will settle, and being opaque, will show thus on our film. Let the bottle stand for a time and radiograph it, and you can very easily prove the foregoing. I hope to have the cuts in readiness for a subsequent issue.

H. P. N.

Review

Dental Electro-Therapeutics. By Ernest Sturridge, L.D.S. (Eng.), D.D.S. Second Edition, Thoroughly Revised. Illustrated with 164 Engravings. Lea & Febiger, Philadelphia and New York.

This is the second edition of a valuable work for dentists on electro-therapeutics. It has over 300 pages of well-written and well-printed matter on an important subject. The chapter on X-ray is useful, and that part pertaining to ionization is of special value. Few operators realize that there is little use of trying to ionize if the current is not properly insulated. The dental chair must be upon a rubber mat, any water or gas pipes must connect with the chair, the saliva ejector cannot be used. There is a full description of the use of electric current for treating root canals, disease of the gum and local infections. We quote the following from the preface:

“The work is specially intended to bring forward the value of electro-sterilization in treatment of root canals and periodontal diseases, and this part has been rewritten with the intention of explaining more fully the technical details of ionization treatment. Details are given in respect to ratio of time required to current strength available in the electro-sterilization of hard and soft oral tissue, and I hope that this will be of value to those who are inexperienced in electrical treatment. I would repeat a word of warning to all who undertake this method of treatment: Do not approach the subject lightly; study carefully sufficient electro-physics to understand the various phenomena of the current with which you are dealing; and obtain a knowledge of the electro-physiological effects; then the therapeutic effects will be most gratifying.”

DENTAL OPERATIONS PERFORMED BY OFFICERS OF THE CANADIAN ARMY DENTAL CORPS IN ENGLAND AND FRANCE, FROM APRIL TO JUNE, 1918 (THREE MONTHS), AND ALSO SHOWING THE GRAND TOTAL OF WORK COMPLETED SINCE JULY 15, 1915.

Total Operations Reported to:	Fillgs.	Treats.	Dents.	Prphy.	Ext.	Devit.	Total.
March 31st, 1918..	638,984	237,064	120,790	110,021	405,560	66,095	1,578,514
April, 1918	31,135	15,321	4,465	6,939	12,697	2,322	72,879
May, 1918	36,687	17,541	5,694	8,876	17,047	2,800	88,645
June, 1918	34,932	16,694	5,572	7,172	14,823	2,735	81,928
Grand total	741,738	286,620	136,521	133,008	450,127	73,952	1,821,966

J. ALEX. ARMSTRONG, Col.,
Director of Dental Services, O.M.F. of C.

Dominion Dental Journal

VOL. XXX. TORONTO, OCTOBER 15, 1918. No. 10.

Original Communications

BLACK HISTORICAL EXHIBIT

*Prepared by Dr. William Bebb, for the Meeting of the
National Dental Association, August 5 to 9, 1918,
Auditorium Hotel, Chicago.*

One of the outstanding things of the great National Dental and Canadian Dental Association meetings in Chicago was the Black exhibit. It would take hours to even look at the drawings, paintings, illustrations and scientific apparatus shown. Below is an outline of the exhibit.—Editor.

On the occasion of the dedication of the monument to Dr. Black, it seemed appropriate that there should be exhibited some of the material things which will serve to remind the older and inspire the younger practitioners with the work of dentistry's greatest scientific investigator, writer and teacher. The officers of the National Dental Association, therefore, requested Dr. William Bebb, to prepare a Black Historical Exhibit, and arranged for its display in the South Parlor of the Auditorium Hotel.

There never has been shown at a dental meeting a historical collection of such magnitude and interest. It covers the entire period of Dr. Black's life from his entry into the practice of dentistry in 1858 up to the time of his death in 1915. It not only brings one into touch with his dental activities, but presents many phases of his work in other lines and of his home life not heretofore recorded.

This exhibit consists of a reproduction of Dr. Black's offices and the display of his original manuscripts, published articles and books, his scientific instruments and many personal items of interest.

The building shown, while not intended as an exact replica, is correct in the shape and size of the rooms, the furnishings and their placement. The location was at Jacksonville, Illinois, and the period about 1895. Dr. Black practiced in these offices, which adjoined his residence, from about 1885 to 1897,

when he moved to Chicago. The rooms were part of a two-story frame house and were entered from a hallway that occupied the position of the present porch. The back door opened into his combined dental laboratory, machine shop and chemical laboratory—what would be called to-day a research laboratory. The furnishings for the most part are the identical items used by Dr. Black. Replicas have been made of a few things which had been lost or destroyed. In examining these items, it should be remembered that Dr. Black discontinued practice when he moved to Chicago in 1897, and the furnishings have been stowed away in various places, so that they hardly present the same appearance as when in use. Except for a few necessary repairs, they have been left as they were.

The display of Dr. Black's writings and scientific instruments should serve to impress each visitor with the stupendous work accomplished by one man. There are hundreds of original manuscripts, covering a period of fifty years. It would require several years of a stenographer's time to copy all that Dr. Black wrote. A careful view of the titles will recall the fact that Dr. Black was a student in many fields aside from dentistry. There are articles on the Solitary Wasps, the Seventeen-Year Locusts, the Earth Worm, Tornadoes, Fossil Woods, Our Police System, the Use of Books, Typhoid Fever, Scarlet Fever, Bright's Disease, Mechanic Arts, Morality, the Microscope and Its Uses, the Theory of Sight, City Water Works, several Indian stories, many articles on chemical subjects, articles on travel, etc., etc. For fifty years it was a part of his routine to make written record of his thoughts and work, and thus he left a rich legacy.

The scientific instruments, only a part of which can be shown on account of the limited space, are in themselves a wonderful exhibition of the work of this man. Each instrument was designed for the purpose of working out some new problem. Most of them were made by Dr. Black in his own workshop.

The many diplomas and numerous gifts convey to the mind something of the esteem in which Dr. Black was held by his professional brethren. If to these, the kind words spoken and written could be added, no man would dare harbor the thought that he had lived in vain.

Dr. Black was a musician of ability, he played the piano, violin, 'cello, piccolo, flute and cornet. Three of his own instruments, the violin, 'cello and piccolo, are on display.

One of Dr. Black's manuscripts is entitled "How to Rest." One wonders if he ever rested, yet it was his custom to spend a month or six weeks of each summer in the woods or in travel. Some of his fishing tackle, photographs of the boat he designed, and a few outing photographs are shown to remind us that he was a good sportsman.

It seems fitting in connection with this exhibit to show pictures of Dr. Black's family. He left a rich heritage in four children, of the same sterling qualities that made for his greatness; children, like their father, possessed of an unswerving conscientiousness. Nor is any honor that can be bestowed too great for Mrs. Black. Those intimate with the home life of Dr. Black are emphatic in avowing that his greatness, in a large degree, was due to the devotion and self-sacrifice of Mrs. Black.

The association is under obligation to the members of the Black family who have contributed from their treasures and keepsakes that this display might be as complete as possible.

The exhibit follows too closely upon the death of Dr. Black for many to find the intensity of interest that would be displayed twenty-five or fifty years hence. If this collection can be maintained intact, each succeeding year will magnify its importance.

Consider the interest in a like collection pertaining to Robert Wooffendale, the first regularly educated dentist to practice in America, coming here in 1768; or of a display relating to Josiah Flagg, showing something connected with his capture and life on board a man-of-war in 1812; or of some personal touches relating to that great pioneer, Chapin A. Harris. Our knowledge of these men is restricted to written history.

On behalf of the National Dental Association, we desire to express appreciation of the splendid work of Dr. Bebb in collecting and preparing this exhibit. May every member of the association return home inspired by the work of Dr. Black and with the resolve to do what he can to emulate his example by working for the advancement of dentistry.

W. H. G. LOGAN, President.

OTTO U. KING, General Secretary.

Chicago, August 5, 1918.

LEADING EVENTS IN THE LIFE OF DR. BLACK.

D.D.S., Missouri Dental College, 1877.

M.D., Chicago Medical College, 1884.

Se.D., Illinois College, 1892.

LL.D., Northwestern University, 1898.

Se.D., University of Pennsylvania, 1915.

Born near Winchester, Scott County, Illinois, August 3, 1836.

Family moved to farm seven miles southeast of Virginia, in Cass County, Illinois, in 1845.

Attended country school about three months each winter.

Studied medicine with Dr. Thomas G. Black, a brother, at Clayton, Illinois, 1853-1856.

Studied dentistry with Dr. J. C. Speer, Mt. Sterling, Illinois, 1857.

Practiced dentistry at Winchester, Illinois, 1858-1862.

Enlisted in 129th Illinois Volunteers, 1862.

In hospital at Louisville, Kentucky, six months, and discharged for disability, 1863.

Practiced dentistry in Jacksonville, Illinois, 1864-1897.

Joined Missouri State Dental Society, 1866.

Joined Illinois State Dental Society, 1868.

First important dental paper on "Gold Foil" read before Illinois State Dental Society, 1869.

President Illinois State Dental Society, 1870-1871.

Invented one of the first cord driven, foot power dental engines, 1870.

Lectured on pathology, histology and operative dentistry, Missouri Dental College, 1870-1880.

First president of the Illinois State Board of Dental Examiners, 1881-1887.

Wrote book, "The Formation of Poisons by Micro-organisms," 1884.

Professor of Dental Pathology, Chicago College of Dental Surgery, 1883-1889.

Introduced teaching of Dental Technics, Chicago College of Dental Surgery, 1887.

Wrote for the American System of Dentistry, chapters on "General Pathology," "Dental Caries," "Pathology of the Dental Pulp" and "Diseases of the Peridental Membrane," 1886.

Wrote book, "Periosteum and Peridental Membrane," 1887.

Voted life membership in Illinois State Dental Society, 1889.

Professor Dental Pathology and Bacteriology, Dental Department, University of Iowa, 1890-1891.

Wrote book, "Descriptive Anatomy of the Human Teeth," 1891.

Wrote series of articles entitled "The Management of Enamel Margins," Dental Cosmos, 1891.

Professor Dental Pathology and Bacteriology, Northwestern University Dental School, 1891-1897.

Chairman Section on Etiology, Pathology and Bacteriology, World's Columbian Dental Congress, 1893.

Report on Dental Nomenclature, World's Columbian Dental Congress, 1893.

Wrote series of articles entitled "An Investigation of the Physical Characters of the Human Teeth in Relation to Their Diseases and to Practical Dental Operations, Together with the Physical Characters of Filling Materials," Dental Cosmos, 1895-1896.

Dean and Professor of Operative Dentistry, Dental Pathology and Bacteriology, Northwestern University Dental School, 1897-1915.

President, National School of Dental Technics, 1897.

President, National Dental Association, 1900.

Awarded First Fellowship Medal by the Dental Society of the State of New York, 1905.

Special Guest at Annual Meeting of American Dental Society of Europe, 1906.

Wrote Work on "Operative Dentistry," in two volumes, 1908. Testimonial Banquet by the Chicago-Odontographic Society, 1910.

Awarded Miller Prize for most distinguished services for the advancement of dentistry, by the International Committee, Paris, 1910.

Wrote book on "Special Dental Pathology," 1915.

Died on his farm fifteen miles northeast of Jacksonville, Illinois, August 31, 1915.

UNVEILING OF THE BLACK MEMORIAL STATUE

A. W. THORNTON, D.D.S., McGill.

After the dedicatory services in the theatre of the Auditorium Hotel, adjournment was made to Lincoln Park, where the formal unveiling took place. A great crowd had collected to witness this interesting event. A stand had been erected for the accommodation of the members of the Black family and their friends, and from this stand, the exercises were conducted.

Dr. C. N. Johnson, of Chicago, presided, his heart surcharged with emotion, and his few words plainly indicated that he had no sympathy with the thought that "the evil which men do, lives after them, the good is oft interred with their bones." It was easy to read into Dr. Johnson's words, his absolute belief that right and truth, justice and mercy, love and service, are the *enduring* things, the eternal verities.

Dr. Edmund Noyes, a life-long friend of Dr. Black, opened this part of the service with prayer. Those who heard Dr. Noyes, felt that the prayer was the outpouring of a heart, in which sorrow and thanksgiving, human weakness and infinite strength, man's limitation and God's omnipotence, were struggling for expression. "God buries His workmen, but He carries on His Work."

Dr. Thomas Gilmer, perhaps Dr. Black's closest and oldest friend, spoke briefly of Dr. Black and the great work which he had accomplished. No man in the dental profession to-day has a more lovable nature than Dr. Gilmer, and he loved and revered Dr. G. V. Black. His words were as free from affectation as it was possible for words to be. His unadorned address was a word picture of a great man, doing a great work, in a beautifully simple way, all unconscious of the debt which the world would never be able to repay.

"There is neither east nor west,
Nor border nor breed nor birth
When two strong men stand face to face,
Though they come from the ends of the earth."

Dr. Truman W. Brophy closed his carefully chosen words with the well-known quotation:

"Lives of great men, all remind us,
We may make our lives sublime,
And, departing, leave behind us
Footprints on the sands of time."

This thought—of influence, of example, of inspiration, of talents well invested, of accomplishing something worth while, ran all through Dr. Brophy's brief address.

The cultural effect and perfect development of Dr. Black's diversified gifts: physician, dentist, author, musician, artist, scientist, mechanic, patriot, all perfectly blended and symmetrically developed, combines to fashion a man whose death leaves the whole world the poorer.

The sculptor who designed and executed the statue must have been amply repaid as he listened to the many kind things said of his work. In a few brief sentences, he acknowledged his appreciation of these words. The park commissioners accepted the statue as trustees of the city.

Four little girls, Dr. Black's grandchildren, unveiled the statue, which had been draped with five flags. In the centre was the Stars and Stripes, and on one side the flags of Britain and France, on the other the flags of Italy and Belgium.

After the unveiling ceremonies were concluded, a number of photographs were taken. First a panoramic view was taken, showing the crowd with the four little girls at the base of the statue. Then pictures of Dr. Gilmer, Dr. Brophy, Dr. Thornton and some others were taken, each of these standing alone by the statue.

Nothing that the present generation of dentists has done will reflect greater credit upon them than this perpetuation of the name and memory of Dr. G. V. Black in bronze and granite.

THE TECHNIQUE OF SILICATES

A. E. WEBSTER, M.D., D.D.S., L.D.S., Toronto.

Delivered before the Ontario Dental Society, May, 1918.

Mr. President and Gentlemen.—In presenting this subject I want to say at the outset that in the treatment of decay of the teeth by filling there are several factors to be taken into consideration. First, the cause of dental caries, the susceptible and immune areas; next the physical properties of the filling material to be used, and next, the physical properties, we might say, of the tissues or cavity, walls of the teeth to be filled, and then the vital phenomena.

Since we have to-day the subject of silicates, let us first consider the physical properties of silicates, and why we discuss these properties. A silicate is made up of a liquid and powder; it has the property of hardening after mixing. Besides this it has a certain translucency not found in oxy-phosphates. There is said to be some adhesion in the cements; you will remember Dr. Vogt said the other day that it is the colloidal substance that brings about that tenacity or adhesion. During the time of the colloidal substance's presence there is adhesion. After that is over, then there is not in the strict sense adhesion. There is a mechanical attachment to the walls of the cavity.

Now let us go further: how do silicates, or how do cements attach themselves to the walls of a cavity? They attach themselves by working into the little inequalities of the surface of the tissue, and as the particles work into the inequalities and harden, then they are in a sense served by millions of small undercuts, which hold the cement in place. The cement cannot be removed without fracturing these small points. Thus, then, it is the tensile strength of the silicate which makes it adhesive. You can readily understand that a contraction of a cement will interfere with its adhesion, because it will break off these small attachments to the walls of the cavity. Now, when the manufacturer tells you it is very adhesive, oh yes, it has adhesive strength, you must know it is strong, and that it does not contract. There is a distinct advantage in any filling material which will stay steady or slightly expand, as our amalgams do. They are more adhesive.

The next problem is the question of porosity. The silicates are porous; they absorb water. Dr. Vogt told us that unless they remained in water they didn't remain in the tooth. You

will recognize that, those of you who have put a silicate filling in last year, and now put in a gold filling in the tooth nearby, and had the rubber on it for an hour and a half, and that silicate filling was standing there alone all that time, and on the margin you will find it begins to get a little bit slack in the hour and a half's drying. My advice would be to you not to do that, but to keep the silicate wet during the time you are having the rubber dam on; in fact, for longer than a few minutes. The solubility was discussed the other day. Did you notice what the scientist says, "Well, there are very few things which are not soluble"? Did you notice how careful he was—a little dodging around even about gold, whether it was soluble or not? It is the fineness with which we approach the subject. We know that sugar is soluble, certainly, but if we threw a piece of silicate into some vinegar and took it out again the next minute—oh, no, that is all right, that is insoluble—but not so in the scientist's mind.

Silicates will take a fine finish and maintain it and wear relatively well. Now, they won't wear anything like amalgam or gold or porcelain. I mean under occlusion. There is much said now about the bacteriacidal properties of cements. So far as we know the silicates have no bacteriacidal property. It might be a question whether it would be a wise thing if it had. The silicates we do know are a little bit more liable to transmit changes of temperature than the ordinary cements.

We know that there are certain qualities about a silicate that are peculiar, as in porcelain. In the mass it is very strong; in the thin edges it is mighty weakly and friable.

The sphere is the strongest form for a solid, there being no edges projecting to break off. The corners of the cube are right angles. Other forms of solids have acute angles at the corners, which are more easily broken than right angles. The more acute the corner of the solid becomes the more easily it is broken. Or in other words, the more obtuse the cavo surface angle of a cavity is the more acute the corners of the filling and the more likely it will be to break. Hence all angles for silicates should be as near a right angle as possible.

Now, then, the relation of adaptation and pressure to the friability or strength of the silicate. That gives you a fair illustration, better than the other two illustrations here.

Now, I want you to look at these two cones—one was put in fairly liquid, under fair pressure; the other was the same, not quite so liquid, but without pressure; and I want you to recognize how it looks—how the adaptation is. Take the two

together, the same mix. Look at the adaptation. That illustrates the question of pressure. One shows the surfaces smooth, the other rough. You have all seen the finished concrete wall; when they took the boards off some portions of it the gravel was all exposed, and other portions of it with a real tight, compact cement. Did you ever think of those amalgam fillings of ours. If they could be opened out—a tooth sawn in two and opened out—you would just see about the same kind of adaptation in many of them as in the concrete wall. Surely the Lord is with us when such fillings stop decay.

QUESTION: What about the gold filling?

DR. WEBSTER: The same thing in a gold filling.

The greater the pressure within certain limits the better the adaptation. These points were illustrated from large mixes of Portland cement.

Now, what does this teach us? First, right angle joints. Second, pressure to produce adaptation and strength. If those two things are clear to us then we won't butter fillings in.

How long does that pressure need to be kept up? Well, until we will say primary setting begins. I think I ought to take another factor. We have discussed the factor of the filling material. Let us discuss now cavity preparation. The next factor is the physical properties of the tooth tissue, or the cavity to be filled. Will you pardon me if I review a little histology, and I think I can show you an easy way of learning and remembering. Take any tooth midway between the gingival and occlusal and all the way round, the enamel rods stand perpendicular to the surface, and as these rods approach the occlusal and gingival they slightly incline towards the occlusal and gingival. Now, don't run away with the idea that they start to slant markedly. The inclination is just slight at first, but as the occlusal is reached they are in line with the long axis.

Here is a great problem. As we go to the gingival these rods incline towards the gingival in the majority of cases, but in some cases the rods remain at right angles to the long axis of the tooth, even down to the gingival border, or neck of the tooth. Now, that is not absolutely uniform. If we could keep in mind that the enamel rods are perpendicular or almost so to the surface of the tooth no matter where that surface may be, then we would make better preparation for all of our fillings. There are a few difficult points to get around. You know where they are as well as I. You know they are at

the lingual-gingival angle in gold fillings. You know in porcelain that it is necessary to cut those at a right angle, and so in a silicate. The other difficult point will be the labial-gingival angle. Another difficult point will be at the occlusal of a small proximal cavity. At the occlusal of a small proximal cavity for a silicate made at a right angle there may be loose rods, because they are inclined towards the occlusal. For gold we desire to have a bevel at that point, so that we may hold those loose rods.

Now, with that little introduction to the subject of the enamel rods, we have before us the physical properties of the material we are going to use, and we have the physical properties of the walls against which these are to be placed.

What are the indications for a silicate filling, having in mind the physical properties of both the filling material and the cavity walls? Let us not make experiments with silicates, as Dr. Vogt suggested. Silicates should be used on exposed surfaces, which is the only reason for using them at all. Then, why use a silicate in a third molar? Small cavities in anterior teeth, especially labial cavities; facings for gold inlays and short crowns. Many times a gold crown may be made for a bicuspid with a cavity prepared on the buccal side, which may be filled with a silicate with great satisfaction to yourself and the patient. Keep in mind that you may have to renew it about every year or two. Head recommends that silicates may be used for setting porcelain inlays, and in fact gold inlays, because he says the silicate is less soluble than any other cement that we have. But, by the same token, it is less adhesive, having less tensile strength in small particles; hence it is less adhesive.

These are some of the experiments: Large cavities in anterior teeth with heavy occlusion. You know the woman who consults you with an upper anterior tooth projecting, and a lower that can't come into occlusion with that, and the corner split right off, and she wants it fixed up. You can fix it up with a silicate, because you know she can't bite it out with the lower tooth. That is a possibility.

Large cavities for old patients, or those who are ill. Many times you will be called upon to make a pleasing filling for an old lady whose daughter is going to be married in a few days, or a week. She is unable to be out, and you may have to go to the house. I have had to do it many times, put in a nice silicate filling in a place where I knew it wouldn't last more than the wedding. Or another one where there are many

daughters. Those are the indications for silicate fillings. To review. Keep in mind, as I have already illustrated to you, that the physical properties of the filling material govern to a certain extent the formation of the cavity. Put no dependence in adhesion. Put no dependence on adhesion as represented to us by the manufacturer. You know how much adhesion there is. A strict mechanical retention is required—nothing else—its friability. Place no thin edges, lap joints on or near hammering occlusions. Square butt joints between enamel and filling, spherical bulk or mass desirable. Strong well supported enamel, though thin, and no dentin under it, may be left standing, and in a measure help in retention. That is skating on thin ice, of course.

QUESTION: Repeat that assertion.

DR. WEBSTER: Strong, well supported enamel. It is supported, not by dentin; it is at a corner some place, at a location some place in the tooth that the arching of the enamel supports it, and there is no occlusion against it, and though it may be thin, yet it may be left, and will assist in retention.

QUESTION: Lingual or labial?

DR. WEBSTER: I wouldn't depend too much on it on the upper lingual, but on the labial surface you will find it desirable many times to leave the enamel to support the corner of the tooth. You cut that enamel out and down comes the corner, and then you are up to another operation altogether, and you may in the case I indicate leave the enamel on the labial side, which will help to support the occlusal corner and hold the tooth together perhaps all the way from one to five or six years in patients in advancing years who do not bite very heavily on their teeth, because of sore pericemental membrane.

QUESTION: Is that an experiment or indication of its use?

DR. WEBSTER: That opens up another question. Let me answer it this way: You make operations on patients' teeth in accordance with your view of the prognosis of the operation. You say to yourself, I can put in a silicate filling that will last four years, and in doing so I believe that this enamel which is here will last that same length of time, but I wouldn't undertake to put a gold inlay in there, or perhaps a gold filling in there, because I would expect that gold inlay or gold filling to last twelve years, and I know the enamel wouldn't last that long. So that I believe, in accordance with my judgment of what the tooth tissue will stand, and the patient himself, or herself, will say, I would rather have this kind of operation

for four years than bear with the other, because they might not ever need the other anyway—something might happen. That is about the judgment you would have to use. I know to me that would be an experiment.

With gold, greater access is required, and clearer view and stronger walls to pack against. You see now we are preparing for the kind of material we have. No fine, sharp angular undercuts or angles in the cavity as in gold. Round burrs, spoon excavators for cavity preparation. It is hard to fill an acute angle with a semi-solid substance, because you are more liable to confine a little air in there and have some difficulty in expressing it, while with the gold you want an angle. Irregular enamel outlines are not objectionable. It has been discovered by those who work in porcelain that an irregular margin is more deceiving to the eye than an absolutely straight line. For example, you have watched the paperhanger making a joint, and he just didn't take the scissors and cut the roll of paper across and make the joint where it had been too short. He wet the paper and took it to the table and tore it and let it appear irregular, and pasted it on, and thus made a hidden joint. So that an irregular joint in a porcelain or a silicate is not objectionable.

QUESTION: It has not the same strength, though?

DR. WEBSTER: No, it won't have the same strength. I believe a cavo surface angle must be as near a right angle as possible. Large areas of dentin approaching the pulp should be protected with a non-conductor, because we know this substance is a better conductor than the oxy-phosphates, and besides there is more of the phosphoric acid unsatisfied in a silicate filling than in an oxy-phosphate, and hence it is more irritating to pulp tissue.

QUESTION: Do you mean a cavity lining?

DR. WEBSTER: Yes, a cavity lining of some kind.

Silicate should not be brought close to the pulp, no matter how small a quantity. There may be just a small opening right down close to the pulp. Don't squeeze it down there. Silicates are no more irritating to vital tissue than other cements, but they are better conductors. There is no reason to believe the silicates contain any more arsenic than any of the other filling materials.

The technique of cavity formation on the basis of what we have said—small cavities in anterior teeth, careful examination to determine the extent of the decay, the amount of enamel involved, the discolorations, if any, the friability of the enamel,

the susceptible and immune areas, the position of the contact, and the space required, and the opportunity to place rubber. All of those things have to be found out before you start. It is upon what you discover under that examination you make your decision as to whether it should be a silicate or oxyphosphate or gutta percha or gold filling, or gold inlay or porcelain inlay, or perhaps some other form of filling.

One thing I neglected to mention in connection with the enamel is that old practitioners know full well the direction of the enamel rods by experience. If you should ask one of them the direction of an enamel rod on a certain point he would probably say, "Let me have the tooth and I will tell you," because he knows from how the enamel cuts just about what direction it runs, and how it should be handled. That is a thing that the young man does not know, and the old man does not know that he knows it.

As for separators, medium separation is all that is necessary, and there is only one separator, and you haven't got it—the Perry Universal Separator. The Perry Universal Separator takes hold of the teeth and pulls them apart; it does not wedge them apart and wedge the gum at the same time, as the horse killers do.

QUESTION: How many of the students have them?

DR. WEBSTER: I saw two or three this year. They are expensive—they are six or seven dollars—and when you can buy one not so good for three dollars, why buy the seven-dollar one?

QUESTION: Those are the ones that have something preventing their sliding up?

DR. WEBSTER: Yes.

Outline form. Cut back the enamel to the chosen outline form. I said "chosen." I mean that you choose the outline form before you start. With your chisels, hatchets, burrs and stones complete the operation. It is not desirable to cut gingival walls beneath the free margin of the gum, nor is it always desirable to cut away a good sound enamel contact, as would be done in gold, to secure the contact against the filling.

A lot of heresy this morning, isn't it? It must be borne in mind, however, that cements seem to dissolve when large contacts occur near a cavity margin. Now, just remind yourselves you have seen that cement filling, or that silicate filling, which involved the labial side chiefly, and the lingual plate remained, and there was a contact from the gingival to the occlusal in the lateral incisor, just along the joint between that

silicate or cement and the enamel it seemed to dissolve, and after dissolving a bit the enamel broke and there was a little "V" shape out of the lingual enamel. You have all seen it. So that if possible leave a sound piece of the enamel if you can for contact and set the silicate away from it. Keep in mind cements are a poor contact—a miserable contact. That is what makes me doubt the wisdom of the silicates in proximal cavities where contacts are required.

Retentive form.—When all the decay is removed sufficient retention is often attained, and no further excavation is necessary. But if there should be, do it with spoon excavators and round burrs.

I may take up now the large cavity with the inlay back, or the Queen Anne front and the Mary Ann back. The method used instead of porcelain is a pin or post retention. The tooth must be thick enough labio-lingually to make the gold strong enough to bear the occlusion, and the silicate thick enough to have its proper color. Better use a gold alloy than pure gold for this casting, because if pure gold is used the least hammering upon the occlusal surface may wear or change the shape of the pure gold and split the silicate out. Prepare the cavity for the silicate in the wax model while it is in the mouth, unless you are working by the indirect method. Have the occlusal metal strong enough to bear occlusion. Right angle joints, and complete the preparation when the casting is made. That is, complete the preparation of the cavity in the metal after the casting is made, because the little fine undercuts you make for the holding of the silicate may be destroyed, perhaps.

Now, just a word about setting these cases. You need the rubber dam on for setting the silicate; you need to use a non-hydraulic cement, because if you use hydraulic cement for the setting of the gold inlay that cement will be destroyed for the want of moisture before the silicate is hard. Then you may use any of the European cements for that purpose, because they are all non-hydraulic. Only the American cements are hydraulic.

QUESTION: Can you set them simultaneously?

DR. WEBSTER: Yes, you might as well economize that way. However, if you do not wish to do it that way I have tried a few, setting the gold inlay in silicate and putting in the silicate at the same time, using it for both, because if you have a post down to the canal that is all that is necessary, but if you have a fine pin and the pulp is alive the silicate is not an easy thing

to handle, because it does not flow readily enough at a consistency which will give strength.

QUESTION: Don't you sometimes make a retention after your inlay is in there in enamel?

DR. WEBSTER: You may do that. Yes; no reason for not except you might loosen up the enamel a little.

A word now in connection with the insertion of silicates. The instruments should not be soluble in phosphoric acid. For instance, none of the ordinary metal instruments are satisfactory. I find great satisfaction in an instrument of this kind; take a German silver spatula and flow gold solder over it, and that will make a fairly good spatula. I prefer that spatula, because I was accustomed to using a metal spatula before the silicates came in; but there are spatulas of agate and cuttlefish, and I don't know how many other kinds that are used that are insoluble, but a great number of them wear away rapidly, and all those wearings must be in the fillings. Keep that in mind. The bone ones wear very rapidly, and then there is celluloid, which wears exceedingly rapidly, and you may have a certain composition of celluloid in your filling which is not desirable.

QUESTION: Is gold soluble?

DR. WEBSTER: Yes, from a scientist's point of view.

QUESTION: Will it wear, too?

DR. WEBSTER: Yes, but it won't wear any faster than the others. It will wear probably more rapidly than agate or tantalum. The great difficulty with the instruments we get is that they are all too big for the amount of the material required for the cavities we want to fill, and the reason they are big is because they cannot be made of materials that will be strong enough to give pressure, so that they really ought to be made of metal, such as tantalum or some of those metals. You take, for instance, the bone ones; you can't get them in between the teeth at all, and if you do they will break if you press on them, and then there is the tortoise-shell. Take the agates, they will break, and if they fall on the floor they are gone. They are too big to use. I am no friend of theirs.

The celluloid matrix should be used, and a little bit of cocoa butter put on the matrix before it is put in place, and when I say that, I mean a little bit. Put some on and rub it off. If you put a whole plaster of it on you may have to make a fold over in the silicate and incorporate some of the cocoa butter into the silicate.

Then there is the same old question of packing plastic materials into a cavity. Shall we put them in in mass, or in small pieces? In large cavities, certainly in small pieces; in small cavities you can't do anything else but put them in in mass. So that they can talk about it all they please, you are compelled to do it in mass in small cavities, but in large cavities, of course, you can put it in in mass; but whatever method you follow be sure there is absolute adaptation, as the illustrations of those cements that you saw would indicate. Bending instruments are no good for adapting a more or less semi-elastic sort of material; it must be carried home slowly and firmly, and held and another quantity taken, and as we approach the last packing the pressure must cover as large a mass of the material as possible, and it is sent home and held. Then take, for instance, the matrix which you have; carry that matrix around the tooth, and hold it tightly and then lay the burnisher on the outside of the matrix and rub and hold it tightly in place, following, as I believe, the correct practice of Clyde Davis. Tapping the matrix on the outside is of great advantage in bringing about a smooth surface and equalizing the fluid throughout the granular mass. Now, as soon as there is sufficient solidification, then you may remove the matrix, and you will judge that by having put some of the silicate on your thumb nail, and when it is hard enough on the thumb nail to be unelastic or unbending, then you know it is so in the tooth. Keep in mind that the advantage of using it on the thumb nail is that the temperature is about equal to that in the tooth.

Never loosen the matrix too soon. You have often done it, and it just bent a piece of the edge back. That is just pretty nearly a spoiled filling. You can't mend it now; it is done. You may let the patient go, but you can keep in the back of your head that there was a poor operation, and you will have to attend to it the next opportunity.

When the matrix is removed trim off the excess around, and immediately cover the filling with something that will hinder the taking up of moisture from the surface. Cover it over, so that the normal amount of water of crystallization will be present.

The recommendation is to leave it until the next day to finish, and I believe it is a good recommendation for most of the silicates. How shall we finish these? Stones and strips, and there are very few of the ordinary files or cutting instru-

ments of that kind. A great number of men get at these with Gordon White trimmers, and they just do damage.

QUESTION: Is it better to have strips painted over with cocoa butter?

DR. WEBSTER: In finishing it is wise to have the strips painted over with cocoa butter, especially if you are doing any finishing at the time of the operation, because then you keep the surface always covered so that it won't get wet. After you leave the rubber dam on for 15 or 20 minutes, as indicated, the manufacturers advise covering the whole mass over with something impermeable, and they don't give us anything in a bottle that is really impermeable to moisture. I think your own shellac is worth a bushel of the stuff they give us.

With reference to a question as to the celluloid tooth form, it does very well for building up a great big corner temporarily for an old lady. I don't think I would use a celluloid tooth form for the purpose of inserting a filling in a cavity. You can't get pressure enough, and you can't get adaptation of the silicate in that cavity.

QUESTION: Do you produce the whole tooth with that?

DR. WEBSTER: Sure, make crowns of it and cement them on, and so on.

QUESTION: What about the rubber dam?

DR. WEBSTER: Dr. Vogt, who is a chemist, said he had heard of some crazy fellow in New York that made one of those things and was fool enough to cement it on, and thought it would stay. That is what a scientist would think about it.

QUESTION: You said no agate or bone instruments for you. What are we going to use?

DR. WEBSTER: Tantalum.

QUESTION: We can't get them now?

A MEMBER: He ought to have had them long ago.

A MEMBER: Still the manufacturers claim we should not use tantalum.

DR. WEBSTER: Because they are soluble in liquid?

A MEMBER: Yes.

DR. WEBSTER: I thank you very much, gentlemen, for a patient hearing. I will give way now to the next part of the programme.

NOTES ON OPERATIVE DENTISTRY AND DENTAL PATHOLOGY

A. E. WEBSTER, M.D., D.D.S., Professor of Operative Dentistry
and Dental Pathology, Royal College of Dental
Surgeons, Ontario.

MANAGEMENT OF DECIDUOUS TEETH OTHER THAN THE TREATMENT OF DENTAL CARIES.

INDICATIONS FOR EXTRACTING SOUND VITAL TEETH.

1. When the regular time for the physiological loss of the tooth has arrived, as indicated by the age, size and development of the child. The progress in the loss and development of other teeth is an aid in determining when to extract.

2. If a tooth is wedged between two other teeth, though not loose.

3. If there is evidence that absorption of the root is not taking place, and the time has arrived for the permanent tooth to appear.

4. Though the deciduous tooth is not loose it should be removed if the permanent tooth is coming in malposition.

Note.—A child should be encouraged to loosen and remove its own deciduous teeth, but if a tooth becomes malposed or sore to bite upon, it should be removed at once.

Premature and meddlesome extraction should be avoided. Be prompt to assist and guide nature, but do not meddle.

INDICATIONS FOR EXTRACTING DISEASED TEETH.

Pulpitis.

Extract in cases of pulpitis any time within eighteen months of the normal time for the loss of the tooth, except the anterior teeth and the first temporary molars, which might be removed at an earlier date.

Infected Pulpless Teeth.

All infected pulpless teeth, whether paining or not, should be extracted with the possible exception of the second molars.

INDICATIONS FOR CAPPING EXPOSED VITAL PULPS.

1. Accidental Non-infected Small Exposures.

2. Recent exposures from decay may be capped some times.

How to Cap a Pulp Exposure.

1. Accidental Small Exposures.

If blood, absorb with spunk. Apply direct to exposure

with small ball burnisher a paste of oil of cloves and oxide of zinc. Cover this with cement without causing pressure. If no discomfort, the surface of the cement may be removed and a more permanent filling inserted at a later date.

2. Exposures from Decay.

First Sitting.—Remove decay. Wash out with tepid water. Dry. Apply a paste of oxy-sulphate of zinc and oil of cloves.

Second Sitting.—If all decay removed at first sitting, then only remove enough filling to make permanent operation.

First Sitting (another method).—Remove decay. Apply Dakin's solution or cloves on cotton; seal with cement.

Second Sitting.—Remove dressing. Dry. Apply oxy-sulphate and cloves paste; cover with cement.

If pain, pulpitis or infection follows, extract.

LINING OF DEEP CAVITIES IN DECIDUOUS TEETH.

Remove decay. Rub bottom of cavity with nitrate of silver pellets. Apply a varnish or soft cement. Make permanent filling over this.

DEVITALIZATION OF PULPS OF DECIDUOUS TEETH.

Where arsenic may be used:

1. Not until two years after the eruption of a tooth.
 2. Not within two years of the time of the loss of a tooth.
- Arsenic may be used between these periods.

Note.—A very small quantity of arsenic should be used, and not allowed to remain in place for more than twenty-four hours—better less. In all other cases use novocaine or phenol and pressure or nitrate of silver. In partially dead pulps, or cases where all the tissue is not removed use nitrate of silver and ammonia solution, followed with formaldehyde, and fill canal with chlora percha and gutta percha cones. Infected pulpless second molars may be treated in the same way. Deciduous root canals may be filled with chlora percha and gutta percha cones, or paraffin paste, or oxide or zinc, creosote, and oil of cloves, according to conditions, having regard to the patient, the canals, their anatomical form and the apical end and the prior conditions.

THE MANAGEMENT OF PATHOLOGICAL CONDITION OF THE DENTAL PULP AND PERI-APICAL TISSUES IN PERMANENT TEETH.

When to Extract:

(A) Extract every tooth from which infection cannot be removed and the tooth made comfortable and useful.

(B) Extract all teeth which serve no useful purpose in the mouth.

NOTE.—Teeth may be extracted for purposes of orthodontia or prosthodontia.

(C) Extract every tooth with pulpitis whose pulp cannot be removed and the canals properly filled as may occur because of position, location of the tooth, or because of anatomical form.

(D) Extract every tooth which is the seat of an acute apical peridontitis or peri-apical abscess if the pain is intolerable and cannot be otherwise relieved, or if there are grave systemic symptoms or if there is reason to believe that there is such a destruction of the peridontal membrane that the tissues will not return to a normal condition.

(E) Extract every tooth from which there has been lost by disease a half of the peridontal membrane.

(F) Extract every tooth root which has been the seat of one or more acute infections or a chronic infection extending over some years which has detached any considerable portion of the peridontal membrane or rendered the tissues of the root dark or grey in color.

(G) Extract all teeth with exposed pulps infected or paining teeth for patients suffering from syphilis or tuberculosis.

When may an exposed vital pulp be capped in a permanent tooth?

(A) It is desirable to cap the pulps of the teeth whose roots are not yet fully developed.

(B) It is often desirable to cap the pulps of teeth in patients who are very young, very old, enfeebled by disease or pregnancy.

(C) Small traumatic exposures of less than half a M.M. in area.

(D) Exposures made in attempts to remove decayed tissue may sometimes be successfully capped after disinfection.

DEVITALIZATION.

Paining Pulps.—(A) Pain started by heat and relieved by cold.

(B) Pain from infection which has lasted for an hour. (Especially at night.)

(C) All exposed pulps. (Not to be capped.)

Not Paining Pulps.—(A) All exposures. (Not to be capped.)

(B) In rare case for prosthetic purposes.

(C) Known pathological pulps which are liable to acute infection or extension to alveolar tissues.

METHODS OF DEVITALIZATION.

Anesthetics.—General. Conductive. Interoseous. Infiltration. Pressure (hand pressure, high pressure, absorption.)

Poisons.—Arsenic. Phenol. Mineral Acids. Nitrate of Silver. Sodium Potassium.

Anesthetics.—Single rooted teeth. Poisons for others.

CASES IN PRACTICE

(Reported by W. J. L.)

Case 1.—Some time last February a lady came to me stating how ill her husband was and that her physician had said he could not get well again. He had been treated for several years but was slowly going “west.” I requested that he be brought here and an examination be made. Result: We treated some of the teeth, extracted a few, made an autogenous vaccine and used it. Patient works every day, weight better than for many years, rests well, and health greatly improved.

No. 2.—Sent by medical practitioner. Wrists, ankles and extremity joints all swollen; some even out of proper shape. Patient suffering terrible pain, loss of weight from 165 lbs. to 130 lbs., about 50 years of age. All teeth had been extracted with “local anaesthesia.” Some eight months previous, patient informs us, the teeth were very bad and that pus could be seen around them any time. Now as we had never seen this patient till this visit we secured all history possible. The result was, a decision was made to draw away about 5 c.c. of blood. From this we made a vaccine. Patient is proceeding along recovery’s road very speedily and with satisfaction to all.

No. 3.—A medical practitioner had erysipelas, and as a remedy the erysipelas vaccine was administered resulting in a temporary cure, trouble returning a second time. A second administration of erysipelas vaccine resulted in a second failure and return of trouble. As I knew this patient an examination of oral cavity was suggested. Result: We made a culture from a pocket of diseased latual. This was used for vaccine and added to the original erysipelas vaccine. The use

of this has permanently cured the patient (nine months almost). Might say this growth on two slants was given later upon request to a bacteriological supply firm.

STEPS LEADING TO BRITISH COLUMBIA ENTERING THE DOMINION DENTAL COUNCIL

EMERY JONES, D.D.S., New Westminster.

Over eighty per cent. of the dentists of British Columbia are American graduates. Until the amendment to the constitution in August, 1918, the Dominion Dental Council discriminated in favor of Canadian graduates to such an extent that an American graduate was not permitted to present himself for examination by the D.D.C. For this reason the Pacific province felt that she had little to gain and much to lose by being represented on the Council.

Several members of the profession in British Columbia felt that some of the objectionable clauses in the constitution might be amended, and so in March, 1916, the Vancouver Dental Society invited Dr. Doyle, the president of the D.D.C., to meet with them at their annual banquet. At this meeting the president expressed the opinion that once British Columbia elected a representative, any reasonable concessions would be granted to meet the objections. One year later the secretary, Dr. Cowan, on being requested, wired in effect that he believed that the wishes of British Columbia would be granted when she became a part of the D.D.C. As a result of these representations, the Vancouver Dental Society requested the Council of the College of Dental Surgeons of British Columbia to use its influence to have the necessary legislation to empower the profession to join with the Dominion Dental Council.

In March, 1917, the Dental Act of British Columbia was re-opened, and the president of the Council, with a large delegation, made a personal appeal to the Committee of the Legislature that the Dominion Dental Council clause become a part of the Act. As a result of this appeal, the clause was adopted, and in November, 1917, British Columbia's representative was appointed.

At the bi-annual meeting of the D.D.C., held in Chicago in August, 1918, the constitution was amended to grant the promised concessions to the Western Province.

THE STUDY CLUB

As outlined by Dr. C. V. Conzett, of Dubuque, Iowa, at the Chicago Convention of the National Dental Association.

JOHN A. BOTHWELL, D.D.S., Toronto, Ont.

The status of a profession is determined by the ability and character of those composing it. The Government has given dentistry a standing in the army and navy, but unless the profession maintain that proud position of professional worth which it has had given to it, the same will soon be lost. This can only be done by ascertaining our failures and striving to correct them.

In building a body of professional men, two things are essential: 1st, Preliminary education; 2nd, A desire for self-culture. In the first instance, the colleges require a four-year dental course, but a much higher standard of efficiency could be obtained by an additional two years, thus enabling the students to hold their place beside other professional men. In the second place, self-culture in the profession must be reached by the men in the profession becoming inspired, seeking higher scientific attainments by head-work and hungering after more and better knowledge concerning their profession. Some do this in the seclusion of their own laboratories, while others take post-graduate courses. The local Dental Society has done yeoman service in stimulating thought, but above all these ways is The Study Club:

The club to be composed of a small group of not more than twenty men desiring to study the problems of a special subject—the watchword to be “Concentration.” The subject should be chosen and a competent teacher selected. Real practical work should be undertaken by each member. Friendly criticism by the fellow students will help to stimulate thought and work. Books should be selected, and time be given to home study between the club meetings, which should be held once or twice a month.

Any subject pertaining to dentistry may be chosen, but special care should be taken in the selection of the teacher—when the selection is made, accept his methods of technique for the time, so that the time of the club will not be lost in useless discussion. The National Dental Association could do nothing better than to stimulate the formation of these Study Clubs from one end of our country to the other.

MY "WILLMOTT" SPOON

(By Gray McClintock.)

I missed it off my table this morning, and when I made a note of it to the little girl who cares for the instruments, she said that she had sent it to the platers to have a new sheen put on it. At the other chairs there are two more just like it, but my old friend has a little personality all its own. It had a beginning with me, made a start in life when I did, and for thirty years it has been a righthand man. I can see yet the little modest group of instruments, that as a student I acquired from the proceeds of my father's contribution to my education. Its usefulness has demonstrated my need of it a thousand times. Its companions are all gone. It has carried amalgam as nothing else seemingly could! helped me burnish the plastic mass into place with a perfection all its own; picked up and put into place gutta percha, and temporary stopping, times without number; acted as a scraper for diseased bone; and more than once was a splendid substitute for an elevator in removing roots from the kiddies' mouths, and when I reversed it in my uses, the other end was solid and heavy enough to give "weight" as a diagnostician. It has served me well.

I wore its first silver plating from it in the old factory clinic on Louisa St., where they used to make porch furniture on the ground floor while we made dentures, and received our store of dental knowledge, on the upper ones.

It has been useful and a pal in ten States of the Union; through the contingencies of a dozen post-graduate courses; has ministered to my aid in the Far North country, among the Hudson Bay people, and the Sisters at Chipewayan, and has helped me at work in the mouths of the nobility of Britain. It stayed with me when breeding, heredity, and environment dragged me by habit through the shadows of intemperance, and has helped me in my struggles to "beat back" to decency and honor once more.

It typifies the sterling worth of the men who prepared it for useful service, and shines to-day as does the memory of the man who conceived its need, and gave it a name—a memory that is a heritage of honor of lessons learned and lessons lost: placed and unplaced monuments in the roads of yesterday that have a vanishing point in the golden afterglow that marks the end of a perfect day.

DR. WILLIAM GREENE, LETHBRIDGE, AN AEROPLANE EXPERT

By W. C. A. Moffatt, in The Star Weekly.

Regarding the important part that has been and still remains to be played in this war by the aeroplane, there has never been any doubt but that the "Father of Aviation" has for the past four years been a resident of the Dominion of Canada, practising dentistry in a humble way in Alberta, is something that is known to few Canadians. William Greene, M.D., D.D.S., is reputed to be the man who first successfully launched the battleships of the air, but that this distinguished personage and Dr. "Bill" Greene, known throughout the northern part of the farthest-west Prairie Province, were one and the same has long been successfully concealed. But having heard the call to arms, the quiet Alberta dentist has closed up his office for the period of the war and is doing his "bit" on the construction of aerial Dreadnoughts in Washington.

The fact that the United States has determined on an extensive air programme has been the means of recalling Dr. Greene from the simple life and has reclaimed to the mechanical world a genius in aeroplane-building.

In the days when Orville and Wilbur Wright were conducting their first experiments and Curtiss was endeavoring to devise a biplane that would balance in the air, Dr. William Greene was working along more practical lines than either, being at the time treasurer of the American Aviation Society and engaged in conducting experiments in Rochester, N.Y. In 1908, for the first time in the history of aviation, Dr. Greene carried two passengers in a heavier-than-air machine, and for this was awarded the J. Leo Stevens Cup. Prior to this he had established a reputation for himself by flying—the first to do so—over 500 feet in the machine.

Working steadily in his laboratory, the doctor began a fight to make his name known as the premier manufacturer of aeroplanes for commercial work. However, in this he was excelled by the Wright brothers, who obtained unlimited resources from J. P. Morgan; so, disappointed in his ambitions, he made his way to Canada incognito and as plain Dr. Greene "set himself up" in Alberta. There he "proved up" on a homestead, practised dentistry, and in his spare moments worked out motor-boat designs.

As was his intention, the doctor dropped out of the aviation world both as an expert and as an authority, and had it not been for the war it is altogether likely that he would have courted this comparative obscurity until the end. The entry of the United States into the conflict altered his plans, however, for the doctor, realizing the need for engineers of the new craft, at once wired Washington and offered his services unreservedly. They were hastily accepted, and to-day the man who for some years past has to all appearances been a quiet country dentist—just plain “Bill” Greene to many—is doing his best to “speed up” the construction of aircraft that will go far in whipping the Germans back across the Rhine.

DENTAL TREATMENT OF CANADIAN SOLDIERS

Dental work overseas was the subject of an interesting address delivered by Lieut.-Col. Guy Hume, the noted Canadian orthodontist, who was in charge of the dental service in Orpington Hospital, before the Hamilton Dental Society in the Royal Connaught, on Sept. 27th. Dr. Donald Clarke presided, and among those present were Lieut.-Col. W. G. Thompson, A.D.D.S., of Military District No. 2, who exhibited a collection of features modeled in vulcanite. Other speakers were Major J. G. Roberts, of Brampton, and Major Cummer Hamilton.

In comparing the dental treatment accorded the Canadian soldier with that of the British Tommy, the speaker stated that the latter did not receive the same care as the Canadian soldier when he enlisted, and that the poor state of the British soldiers' teeth was often the cause of their becoming incapacitated for service.

All Canadians, he declared, had to go to Orpington for jaw restoration treatment, which hospital is thoroughly equipped for dealing with this class of injury at no expense to the patients.

Dental Societies

ONTARIO DENTAL SOCIETY—ORAL HYGIENE COMMITTEE

To the Members of the Dental Profession:

The following suggestions are intended to assist you in your efforts to introduce Dental Inspection into the schools of your locality.

The initial procedure would naturally be to place the proposition before the members of the local School Board, who have the power to grant the necessary authority. Most school boards, it is found, need considerable instruction on this matter, backed up by public opinion, before any definite action will be taken.

Public opinion may be created in various ways as follows:

1. Enlist the sympathy and support of the editor of the different papers in the town, and have published regularly, short, telling articles on the importance and care of the teeth.

2. Get in touch with the Women's Institute Branch in your community, and arrange to give a lecture on the subject (illustrated, if possible), at some special meeting. Have this meeting forward a resolution to the School Board urging the necessity for better care of the children's teeth.

3. Take the Public School Inspector into your fullest confidence, and, if possible, arrange for an address or paper on the subject of Oral Hygiene at the next teachers' convention.

4. Finally arrange for deputations representing all these bodies, to wait on the Board of Education, urging immediate action.

Generally speaking, such a propaganda, if energetically carried out, will meet with success.

Remember that, in your efforts to carry out such an educational campaign, the Central Oral Hygiene Committee is at your disposal to render any assistance in its power.

Having gained the necessary authority from the School Board, the next step is to see that the plan is put into immediate execution. In this the resident dentists will be expected to give material advice and assistance.

Remember at the outset that the work is two-fold in character—Dental Inspection, and Dental Education. They are of equal importance, and must go hand in hand.

The regular yearly inspection and all educational work, such as lectures to the teachers, children and mothers, should not be entrusted to any other than the regularly qualified dentist. The services of a qualified nurse will be necessary and valuable in assisting the dentist, and in carrying out the follow-up work, such as forwarding reports to the parents, etc.

Examination charts and any information in reference to the details of the examination and follow-up work may be had by addressing the secretary of the Central Oral Hygiene Committee, Dr. N. S. Coyne, 241 St. Clair Avenue, Toronto.

DENTAL EDUCATIONAL ASSOCIATION TORONTO, CANADA

CONSTITUTION.

NAME.

This Association shall be known as the Dental Education Association.

OBJECTS.

First.

To secure the necessary information upon and freely discuss all questions affecting the profession of dentistry, and take such action in relation thereto as may be deemed in the best interests of the Dental body.

Second.

To advance the members of the Association in dental science and practice.

Third.

To encourage and promote good fellowship and ethical conduct in the profession.

Fourth.

To use every means of raising the standard and status of dentistry, placing the interests and dignity of the profession foremost in all dental matters by supporting those things that are helpful, and opposing all that is detrimental to the welfare of the dental profession as a whole.

MEMBERSHIP.

There shall be one class of members only, and it shall in-

clude all ethical dental practitioners who are in sympathy with the objects of the Association and subscribe to the Constitution and By-laws.

OFFICERS.

There shall be elected annually, by open vote, the following officers, who shall act as an executive and conduct the affairs of the Association, viz., President, Vice-President, Secretary, Treasurer, and the Chairman of each group.

MEETINGS.

The regular meetings of the Association shall be held at the Dental College Building, Toronto, at such times as the Executive may decide. The annual meeting for the election of officers shall be held during the month of May in each year.

FEES.

The membership fee shall be three dollars per annum. Members enrolling in special study classes shall pay an additional fee sufficient to cover the cost of same.

AUDITOR.

A detailed statement of the accounts of the Association, duly audited by the College Auditors, shall be submitted to each annual meeting of the Association.

THE DENTAL EDUCATIONAL ASSOCIATION

Toronto, October 7th, 1918.

Dear Doctor,—

Many of our Toronto dentists have expressed a desire to take up, during the winter months, a definite and organized course of study in some branch of dentistry. To supply their need and also the desire of the large number who are anxious to become identified with a clinic club, the Dental Educational Association has been formed. The Association proposes to arrange courses in the following subjects:

1. Physical Diagnosis.
2. Histology, Bacteriology and Pathology.
3. Local, Conductive and General Anesthesia.
4. Dissection of the Head and Neck.
5. Operative Dentistry.
6. Dental Prosthesis.

If a sufficiently large group desire to take up any study not included in the above groups, a special class will be organized. The Association has arranged for the use of the entire

facilities of the Royal College of Dental Surgeons for this class work, including all laboratory equipment; the instructor or teacher will be selected by the members of each particular group.

At the general meetings of the Association, matters of common interest will be discussed by outstanding men in the profession. Arrangements are being made to have a clinic hour from 7 to 8 o'clock on each night of meeting.

We feel sure that this Association will prove of great benefit and help to each dentist who avails himself of this opportunity to keep in touch with the very latest in each branch of dental science, and confidently solicit the assistance and co-operation of all, to make the undertaking a great success. A copy of the provisional Constitution accompanies this letter. Read it over, and come to the first meeting of the Association, which is to be held in the College Building, on Thursday, October 17th, at 8 p.m. If you cannot arrange to be present on Thursday night, send in your registration card, and we will notify you of our next meeting. The present Executive will continue in office only until the organization is complete, when a general election will be held.

We are delighted to be able to announce that Lieut.-Colonel Guy Hume, whose work at Orpington attracted such widespread attention, will be our speaker for October 17th. He will show slides and models of the work done at Orpington. Colonel Hume occupies a very high position in the Dental profession, and we anticipate a large audience to greet him on his first public appearance in Toronto since his return from overseas.

H. A. McKIM,
Secretary.

THE P. E. I. DENTAL ASSOCIATION

The P. E. I. Dental Association held its annual meeting on the 25th September. There was a good attendance. The following officers were elected: Dr. C. B. Green, President; Dr. A. B. Reid, Vice-Pres.; Dr. J. S. Bagnall, re-elected Secy.-Registrar-Treas. Drs. C. H. Beer and F. S. Lodge were elected to complete the Council.

STUDY CLUBS IN TORONTO

For some time past many Toronto dentists have expressed a desire to take up, during winter months, a definitely organized course of study along some line in dentistry.

There are also many others who desire to become connected with a Clinic club.

To make this possible the Dental Educational Association has been formed.

A number of Classes or Study Groups will be formed so that each member will be able to take up the subject of his choice. Each group or class will select its own teacher or instructor.

General meetings of the Association will be held, at which matters of common interest will be discussed.

A provisional Executive has been formed, also a provisional constitution, a copy of which will be mailed each practitioner giving date of first meeting.

It is proposed that the present Executive will remain in office only until the organization is complete, when a general election will be held.

The provisional officers are: President, Dr. Fred J. Conboy; Vice-President, Dr. Harold Clark; Secretary, Dr. H. A. McKim; Treasurer, Dr. W. B. Amy.

TORONTO DENTAL SOCIETY

The Toronto Dental Society is holding its first meeting for the season at the King Edward Hotel, on Monday, November 4th, at 6.30 p.m. Dr. Hatton, of Chicago, will deliver a lecture on "Physical and Laboratory Diagnosis."

Editorial

EDITOR:

A. E. Webster, M.D., D.D.S., L.D.S., Toronto, Canada.

ASSOCIATE EDITORS:

ONTARIO—M. F. Cross, L.D.S., D.D.S., Ottawa; Carl E. Klotz, L.D.S., St. Catharines.

QUEBEC.—Eudore Debeau, L.D.S., D.D.S., 396 St. Denis Street, Montreal; Stanley Burns, D.D.S., L.D.S., 750 St. Catherine Street, Montreal; A. W. Thornton, D.D.S., L.D.S., McGill University, Montreal.

ALBERTA.—H. F. Whitaker, D.D.S., L.D.S., Edmonton.

NEW BRUNSWICK.—Jas. M. Magee, L.D.S., D.D.S., St. John.

NOVA SCOTIA.—Frank Woodbury, L.D.S., D.D.S., Halifax.

SASKATCHEWAN.—W. D. Cowan, L.D.S., Regina.

PRINCE EDWARD ISLAND.—J. S. Bagnall, D.D.S., L.D.S., Charlottetown.

MANITOBA.—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA.—H. T. Minogue, D.D.S., L.D.S., Vancouver.

VOL. XXX. TORONTO, OCTOBER 15, 1918. No. 10.

DENTAL EXAMINATIONS IN SASKATCHEWAN

The Board has divided the examinations into three parts, A, B and C. A has to deal with preliminary education only, B the more scientific aspects of dentistry, and C comprises methods of practice.

Section A.—If a candidate has junior matriculation in arts in the University of Saskatchewan, he is excused from section A examination. If he holds a certificate of equivalent standing in some other school or university, he is excused from section A examinations. Applicants lacking this standard will be required to take such further examinations, either in whole or in part, as to bring his standing up to the standing of junior matriculation in the university.

Section B.—Examinations in this section comprise such subjects as anatomy, chemistry, metallurgy, physics, histology, physiology, bacteriology, pathology, materia medica and therapeutics. This section is intended to cover the more scientific and theoretical side of the candidate's professional education. Candidates applying for a license in the province who are graduates of recognized dental colleges will be exempt

from examinations in these subjects. It is to be expected that certain colleges of known standards will have examined their graduates in these subjects.

Section C.—It is in this section that the Board holds its own examination. The subjects of medicine and surgery, anaesthetics, prosthetic dentistry, paper and practice operative dentistry, paper and practice orthodontia, and, we presume, ethics, jurisprudence, economics and history. Candidates are required to have a grade of 50 per cent. in sections A and B, 60 per cent. in the written papers of C, and 75 per cent. in practice.

This outline of examinations follows very closely on that followed by the Medical Council of Ontario. It has much to recommend it, and yet it falls somewhat short of the demands and responsibilities set upon the Board by the Legislature. The Board acknowledges what is absolutely true, that as it is constituted it is not in a position to gauge the candidate's fitness in matters of preliminary education and scientific training. It does, however, conduct an examination in those departments in which it alone is qualified to speak. It is the legal representatives of the people who are themselves practising dentistry who are in the best position to judge of the fitness of a candidate to practice.

The methods followed in the United States seem to be the most clear-cut. The universities are educational institutions for the purpose of giving certain training, with the right to grant a degree, which means that the candidate has passed all the examinations. The official State Boards, who are the representatives of the people through the Legislatures, set the standards of dental requirements to practice, and also conduct the examinations and grant the license. In most of the States the management of the profession is directly in the hands of the legislative officials, just as the Department of Justice or Public Works.

At a recent meeting of the Board of Dental Examiners of California, the approval of the Royal College of Dental Surgeons was considered. It was decided that approval could not be granted for the reason that a graduate of an American dental college is not recognized for purposes of examination by the Province of Ontario.

Editorial Notes

Women assistants are now employed in the public schools of Toronto.



3,000 additional dental officers will be commissioned under the new U. S. order.



One dentist is commissioned for every five hundred enlisted men in the American Army.



The Royal College of Dental Surgeons has opened with a registration of over four hundred students.



All dentists serving in the Army as privates at home or abroad will be commissioned before civilian dentists will be called.



There was a demand among the American soldiers stationed in England for dentists, which has now been supplied by the British Dental Association.



Dr. Arthur E. Smith, Chicago, has just completed a course of instruction in Anaesthesia to members of the Odontological Club and their friends, Toronto.



Daughter, School of Dentistry, September 23, 1918. Born to the University and the Great State of Nebraska, Lincoln. Died September 23, 1918, Lincoln Dental College, from traumatic injury. W. Clyde Davis, M.D., D.S., Attending Physician.



The American Red Cross issues the following:

Authority has been voted by the War Council to the Red Cross Department of Supplies to purchase twenty-five sets of standardized dental equipment, at a cost of \$33,750. Ten of these sets are to be given to dentists now on requisition for France, five additional sets are to be held in reserve for immediate delivery, and the remaining ten sets are to be purchased from time to time to replenish the reserve.

Correspondence

Correspondents do not necessarily express the views of this journal.

BIENNIAL ELECTION NOTICE

Royal College of Dental Surgeons,
Office of the Sec.-Treas., 96 College St.,
Toronto, Oct. 1st, 1918.

Dear Dr.:

The biennial election of a Board of Directors of the Royal College of Dental Surgeons of Ontario will be held this fall. The first step will be the nomination of candidates. I enclose herewith a list of the licentiates in your electoral district. This is probably not absolutely correct but it is as accurate as possible from the data in possession. If you wish to nominate a candidate from your district, do so on the enclosed form and send it by registered mail so as to reach me not later than the 10th of November. No nomination will be valid unless the annual licentiate fee of the candidate and the nominator is paid on or before the first of November, 1918.

When the nominations have been made, full directions for voting will be sent to those whose annual fee is paid on or before November 1st, 1918 (a statement of your fee is enclosed).

Kindly note that your nomination and ballot will not be valid unless your fee is paid on or before November 1st, 1918.

Yours very truly,

W. E. WILLMOTT,

Sec'y-Treas. R.C.D.S.

Walkerton, Ont., Oct. 2, 1918.

Editor, DENTAL JOURNAL:

Toronto.

Dear Sir,—

The following resolution was passed by the Bruce County Dental Association, at their meeting, held here, on Monday, Sept. 30th, 1918:

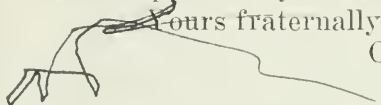
That this Association views with alarm the increased cost of administration of the Royal College of Dental Surgeons, which has risen from 6.5 per cent. in 1908 to 13.6 per cent. in 1918, and protest against the action of the Board in paying a salary to the superintendent of (\$4,500) four thousand five

hundred dollars, per annum, which is in excess of that paid the Bursar or Registrar of the University or any Professor of the College.

And that a copy of this resolution be forwarded to the DOMINION DENTAL JOURNAL for publication.

Trusting that this will appear in your October issue.

Yours fraternally



C. L. GRANT,
Secretary

Obituary

LT. J. G. ROBERTS KILLED IN ACTION

On August 11th, three days after the beginning of the great offensive around Arras, Lt. J. G. Roberts met death leading his men to victory. The dental profession and Canada have lost a young man of rare talents, quiet, unassuming, courageous, of high ideals and lofty thoughts. A young man filled with the responsibilities of citizenship.

Lt. J. G. Roberts was born in Brampton, the son of Dr. J. G. Roberts, so long and so favorably known to the dental profession of Ontario. When Lt. Roberts entered the dental College, some years ago, he did not at once become prominent among his class mates, because of his unusually quiet and retiring nature, but as months went on he was noticed to have about him the best fellows of the college, and when the day of graduation came he was commonly spoken of as the best fellow in every way of the hundreds of students present.

Immediately after graduation, Lt. Roberts joined the C.A.D.C. as a sergeant, under then Lt. Geo. Gow, now Lt.-Col. Gow. Being a graduate, Sgt. Roberts was soon entitled to a commission, but inasmuch as he had signed up to go with Col. Gow as a sergeant, nothing would dissuade him from living up to his undertaking. He was attached to No. 4 Toronto Hospital, where he saw service for two years in Salonica, returning to England with the hospital, having been promoted first to Lieutenant and later to Captain. After serving in the C.A.D.C. for over two years he determined to join the combatant forces. For this purpose he reverted to Lieutenant, to take a course in England and joined the 78th Battalion, in whose ranks he was fighting when he fell.

Major J. G. Roberts, his father, has received many letters of condolence from Lt. Roberts' officers overseas. In these letters appear such expressions as "your heroic son." "His memory will long live to spur us on to the conclusion of this awful struggle." "Gallant and lovable boy." "He was the cleanest and whitest man I ever knew." "Had all the qualities of a leader."

Appended are two letters, one from Lt.-Col. Gow, with whom he served for two years or more, and another from Lt. Frank Ryan, a companion in arms. These letters are printed in full so that if they chance to come under the eye of a young man he may be stimulated to know what qualities in this world serve to attain greatness.

Sherborne, St. John,
Basingstoke, Hants, 23-8-18.

My Dear Major Roberts,—

On receipt of your cable this morning, I at once called up my brother, Col. Gow, the Deputy Minister in London, and read him your message, and he offered to wire you himself, which offer I was very glad to accept, and I presume you heard in due time from him.

I really cannot express satisfactorily my feelings at this time of even my own sense of personal loss—therefore I make no attempt to gauge your own and Mrs. Roberts' and Jim's sister's sacred feelings. Jim came to me a stranger other than on excellent recommendations, and after a very few weeks I became attached to him, and as I came to know him under conditions that showed the man, I grew to love him—so that I was able to feel toward him in absolute sincerity that I loved the boy as my own and could do as you once asked me to—treat him as such. From the first day of his career as a soldier his bed was not one of roses, but I never saw Jim refuse in spirit or otherwise any duty, no matter how distasteful, so that whenever he gained any advancement his friends, officers as well as men, were more pleased apparently than he was himself.

I trust I am not expressing platitudes to your mind; to me I was never more serious when I say that you—his parents—may well cherish with pride and gratitude his sacred memory. He fought the good fight in deadly earnest himself, and has gone to solve the Great Mystery, which we shall all of us one day meet, and I would that we all might bear in mind and follow as a guide, his unwavering and unselfish

character in its interpretation of what true citizenship means.

To you, his parents, may I say that Jim was the reflection of yours and Mrs. Roberts' love and home training, and never was there a son who was truer to the unwritten law of a pure life such as I know you both prayed he might live, than he.

In a measure I feel as though I am trespassing on your private feelings to too great an extent, but he meant so much to me as his original officer that I know you will understand and pardon. In these latter days—after he decided to transfer to the Infantry—I used to plead with him to stay where he was, rendering such efficient service, and he always *smiled his smile* and thanked me for the interest I had in him, but said he couldn't change his conscience on that subject. He was at all times so solicitous about his mother's feelings and would never write until he was sure of his transfer going through. The question of reverting to lower rank never troubled Jim for a moment, and I think the sacrifice made him feel better. I had a characteristic note from him a week or so before he went into action—he always kept me posted, and came down to the house the day before he reported at his post of embarkation with unusually high spirits, and was so pleased that he had done so well in his training course.

I am proud Jim was my friend, and may the consciousness of his worthiness tend to assuage the grief of your crushed hearts.

My prayers are with you all,

Yours sincerely,

(Signed) GEORGE GOW.

78th Bn. Canadians,

France, Aug. 8, 1918.

My Dear Dr. and Mrs. Roberts,—

It is with the greatest regret that dear old "Bobs" has been taken away from our midst. Really, words cannot express the way I feel, when I think of him, one who was loved by his fellow officers and men, always a smile for everyone and a kind word to his men when things were going hard. He is a boy you can not only be proud of, but his country will, like many other brave fallen heroes, look up to, as having given his all for those dear ones at home. It might be of interest to you to know that "Bobs" and I were, at the time of his fatal wounds, the only two junior officers left in the Company. His Platoon was in advance to mine and to the

left. When it happened word was passed to me, and at once I received permission to run forward to see him. There he lay, talking freely and cheerfully with his arms and right leg bandaged and two of his own boys looking after him. I then crept back and got three of my Platoon to get a stretcher, which the boys brought back under heavy fire. The next stage was in getting him out. All went well until another shell struck quite close, wounding two of the three stretcher boys, and our dear boy passed away from the shock not knowing what was happening. I was the only officer to see him alive after he was hit. So it may be of some consolation to know that from all accounts he showed no signs of pain until the end. At the time he was hit he was leading his boys like a little hero. Really, the boys fought like demons when they knew he was hit, and to-night there are a good many "Huns" fast asleep in revenge for the death of their leader.

"Bobs" came over originally with the same hospital as my guardian and uncle, Lt.-Col. W. McKeown, and had been over to visit him with Captain Mallory when we were at Shorncliffe. My letter may not be exactly as most letters of condolence, but I thought you would like to know the facts about your dear boy's death. In ending, allow me, on behalf of all the officers and men, to extend to you both our sincerest regrets.

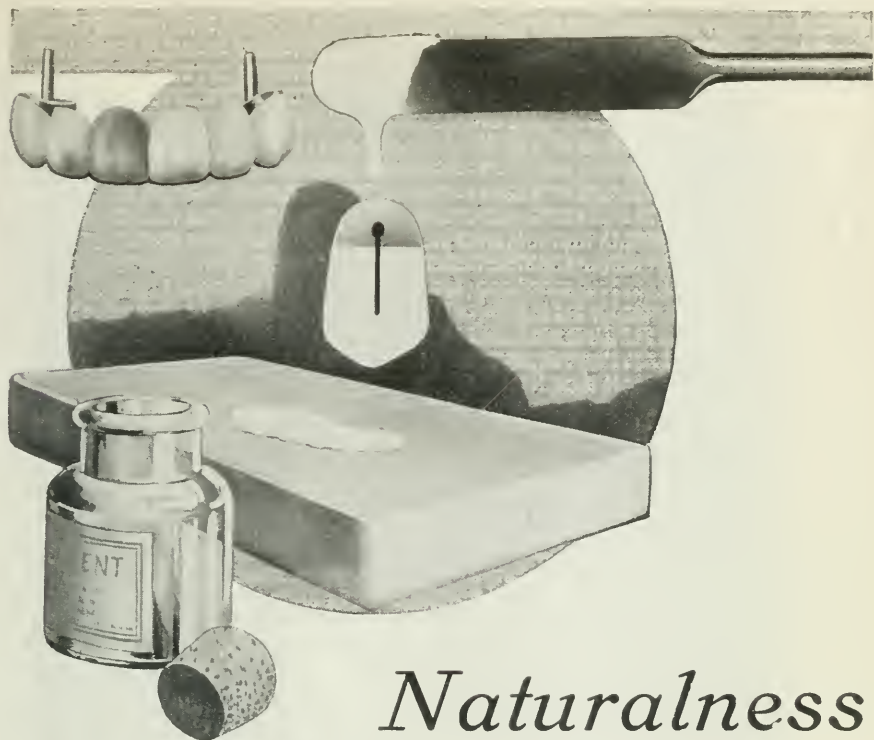
He was a man—a leader, and a little hero.

Yours very sincerely,

F. P. RYAN, LIEUTENANT.

Died.—At Charlottetown, P.E.I., on Oct. 12th, 1918, F. S. Lodge, D.D.S., in the 38th year of his age. He was a graduate of Baltimore Dental College Class of 1903. The late Dr. Lodge was fifteen years in the practice of his profession in Charlottetown.

DENTAL PRACTICE FOR SALE—Complete outfit, in a good town in Saskatchewan; divisional point with water-works, electric light and telephone. A good paying business. Only dentist in town. Reasons for selling. Apply to P. O. Box 76, Wilkie, Sask.



Naturalness

Rarely if ever is there a shade to be matched, which cannot be duplicated with

Steele's Interchangeable Teeth

The technic for shading *Steele's* by the use of cement, works out harmonious shades which cannot be duplicated in the lighter shades in porcelain teeth, which are baked for commercial purposes.

The shade of cement used often influences the shade of the porcelain, especially in the lighter shades. Shades are determined by mixing cement powder with water, and trying on facing in patient's mouth.

General and special technic for Steele's Interchangeable Teeth will be supplied on request.

The Columbus Dental Mfg. Company
Columbus, Ohio, U. S. A.



Lieut.-Col. Guy G. Hume

Dominion Dental Journal

VOL. XXX. TORONTO, NOVEMBER 15, 1918. No. 11.

Original Communications

"THE NEXT BEST THING TO KNOWING OURSELVES IS KNOWING OUR NEIGHBORS"

A. E. WEBSTER, M.D., D.D.S., L.D.S., Toronto.

Delivered before the Hamilton Dental Society, November, 1918.

Without going into full details of the development of dentistry in the United States it is interesting to Canadian dentists to have a short outline of what has happened in the past few years to the south of us. It was the habit in the past for Canadians and Britishers in general to make slighting remarks about the educational standards in general in the United States. Canadian educational councils, boards and departments have had an air of superiority about them that has lead to stagnation. In no part of the country is this more apparent than in Ontario, Manitoba and Quebec. No doubt there was a time when the standards of education in Eastern and Central Canada was generally higher than that of the central, western and southern parts of the United States. There has always been much liberty in standards of schools and colleges of the same class. Graduation from a High school in some States has been much higher than from a High school in another. There was a time when Canadians who could not enter professional schools in their own country for want of a better standard of preliminary education went across the line and were accepted. Many of these have since raised to distinction in their adopted country. Of recent years there has been none of this unless the candidate was willing to state to the U.S. authorities what was not true, and also get some teacher in a High school to state what was not true. One is loathe to admit that there have been many of these false statements made by young Canadians and teachers and principals of High schools. However, this is all past now, but it had the effect of giving Canadians a bad opinion of

educational affairs in the United States, and it had the same effect on the teachers in colleges over there, who found that Canadians were lacking in fundamental knowledge.

There was a time when the term "American dentist" fairly stank in the nostrils of Europeans. This was also not without some reason. Any Legislature in the United States has the power to grant a charter to teach dentistry, or any other calling. As a consequence there were many schools organized for various reasons. Some of the States had no adequate dental laws. Canadian Provinces were almost all open, as well as Mexico and all of South America, together with England and most of Europe. With such a field to draw from, and such an extensive population to serve, it was no wonder that the proprietary school flourished, especially when they gave a doctor's degree, a much-coveted title in these countries. Candidates were graduated without knowing a word of English, though all the instruction was given in English. They were graduated in three, two or one years, according to the length of time the candidate wished to spend at it. Some colleges even did better than this: They went through the formality of an examination only. Others deliberately sold the degree of D.D.S. to all applicants. All varieties of these degrees are held in Canada and many other parts of the world.

Gradually the several States passed dental laws which compelled applicants for licenses to pass an examination, and later to be graduates of a recognized dental college. These two things gradually put the diploma mill out of business. The recognized dental college was a bone of contention for many years, and in fact is still questioned. It was held that no State Board had the right to say that a college was not recognized. It is now settled that a State Board may or may not recognize a dental college as it pleases.

The changes occurring in dental education in our neighboring country are only a part of the great changes occurring in medical education, and in other departments. It has been conceded that the great educational institutions of the United States stand among the best in the world, though there may be many universities of low standing. A country which has been noted for hundreds of years for its great men in science, literature and statesmanship must of necessity have developed some high standards of education. These may be found in Harvard, Yale, Princeton, Stamford, Pennsylvania, Ann Arbor, Minnesota, and others. There are at least twenty universities in the United States of the standard equal to that of

any other country. There are only two universities in Canada which might be classed with the better ones of the United States.

It has been through the influence of these great universities that the standards of general and professional education have been raised during the past few years. Professional education has been in the hands of proprietary institutions until some of the State and highly endowed universities opened departments of medicine, law, dentistry, engineering, architecture, household science, pedagogy and pharmacy. The proprietary medical pharmacy and dental schools flourished for many years, because of the increasing demands for physicians, druggists and dentists, and because of prohibitory laws being passed by the Legislatures. From the business man's point of view the investment looked good. In the name of protecting the public acts were passed by the Legislatures permitting only those to practice who had attended one of these schools. As a matter of fact many of these institutions earned large dividends for their stockholders, and at the same time provided a fair education for their students.

These proprietary colleges were a real necessity in their day. The highly endowed universities of a hundred years ago did not deem it a part of their duty to give a professional education; neither did the State think it any part of its duty to educate the druggist, lawyer, physician or dentist. It has taken many years of ardent work to make the State believe that it must take care of all education, from nursing to divinity. This is now fully grasped by the people of this continent, and also in Great Britain, where there is established state medical service for all classes and ages.

The proprietary school has fulfilled its function, and must give place to State education. The proprietary school must pay its way, and at the same time give an adequate education where it is in competition with State schools. Gradually the private schools give way, as they are compelled to compete in equipment and teaching personnel. In Canada, as in the United States, the proprietary medical schools have been compelled to give up. Old Trinity Medical College in Toronto stood it out for many years after it was known to be a losing game. Every few months a proprietary medical or dental school announces that it has joined a university or closed its doors.

Factors which have brought this about: Increased State demands of education, National Faculties' Association, Na-

tional Teachers' Institute, National Dental Association, International Dental Federation, Government classification of schools.

The same forces which have forced the proprietary medical colleges to close their doors are at work in dental schools. Public health problems and the demands of the public for a higher and better medical education forced more stringent medical laws in the various States, and the union of the faculties of medicine to discuss medical education, together with the formation of the American Medical Association, had its influence. In dentistry the first and most potent factor in raising dentistry from a trade learned by apprenticeship was the formation of the National Dental Faculties' Association. This organization established a standard of preliminary education, time, attendance, equipment and professorate. Soon after this was formed the National State Boards of Dental Examiners, which established a standard of education before admission to examination. About this time was formed the American Dental Teachers' Association, and later the American Universities' Dental Teachers' Association. The purpose of these two latter bodies was to establish standards and methods of teaching dentistry.

The International Dental Federation, which is composed of official representatives from all the civilized countries of the world, and is for the purpose of arranging international dental congresses and for exchanges of thought in dental education and practice. The influence of the European members of this organization has done a great deal to stimulate the study of the scientific aspects of dentistry in our neighboring universities.

Undoubtedly the greatest factor in sealing the doom of the proprietary dental school in recent years was an address delivered in Montreal to the McGill medical students by William Hunter, of London, on the relation of oral infection to general disease. In this address attention was directed to the dangers of crown and bridge work, as well as septic roots. When this address was published there was a prompt resentment by the American dentist, but as the matter was more carefully studied resentment gave way to acquiescence, and to-day there is established under the National Dental Association research centres in many of the universities of the United States. This prompt transference of the centre of dentistry from the mechanical to the medical found the proprietary dental school but poorly equipped to conduct either investigations or mod-

ern dental education; nor were there any funds forthcoming to meet the demands. The teaching bodies hardly recovered from the demanded increase of scientific medical dental education until the findings of the research organizations demanded a new mechanical dental education, based upon pathology, hygiene and operative surgery. These last demands are even more expensive than the former. To teach a student scientific aseptic dental operating alone requires an equipment, outside of building, of at least three hundred dollars per student in the laboratory, and a thousand dollars per student in the infirmary. A school with a student body of 400, or a hundred in each year, requires to-day an equipment of at least a hundred and fifty thousand dollars to teach this one department. It can be readily seen that the fees of students alone could hardly pay interest on so large an investment, and at the same time pay dividends to the stockholders. The cost of a dental education to-day is too great to make it a profitable commercial enterprise.

The last straw that broke the back of the proprietary dental school came since the United States entered the war. At the annual meeting of the National Dental Association, held at Old Point Comfort, in 1907, steps were taken to form the Dental Educational Council of America, a body composed of three members from the National Dental Association, three members from the National Association of Dental Examiners, and three from the National Association of Dental Faculties. The Dental Educational Council of America was charged with the duty of classifying dental schools. It would appear that this had never been done until within recent months. In October 1917 the Congress decreed that dental students would be permitted to continue in their courses provided they were enlisted in a reserve corps ready for call at any time. But in order to qualify for such reserve corps students must be in attendance at a recognized dental college. The surgeon general at once asked for a classification of dental schools which was undertaken and their report follows. Class C schools are looked upon as not well organized, and therefore not qualified to accept dental students for the army. It appears as if A and B schools are recognized. It can be seen at a glance the effect of this classification of dental schools by the United States Government. Students who come within the draft ages and are physically fit will be drafted if they register in schools

classified as C. One at least of these C schools has joined a state university and asks for a new classification.

The minimum requirements for a class "A" school.

ADMINISTRATIVE POLICY.

Section 1. (a) The administrative policy of the school must be satisfactory to the Dental Educational Council of America. The Dean or other executive officer must hold and have authority to carry out fair ideals of dental education. The conduct of a dental school for profit to individuals or a corporation does not meet the standard of fair ideals.

(b) The value of the building and equipment (grounds excluded) must be equal to at least \$300.00 for every student enrolled.

(c) The school must have facilities and equipment for at least twenty-five students in each class.

ENTRANCE REQUIREMENTS.

Section 2. (a) The requirements for entrance shall consist of graduation from an accredited high school or academy which requires for graduation not less than fifteen units of high school work obtained in a four-year course beyond the eighth grade of the elementary school. No conditions on the foregoing entrance requirement shall be allowed.

(b) An accredited high school is defined as one which is accredited as a four-year high school by the United States Bureau of Education, or by a university which is a member of the Association of American Universities, or by the State University of the State in which the high school is located.

(c) In the case of an applicant who is not a graduate from a high school or academy, as defined above, the full equivalent of such education in each individual case must be established and attested to by the highest public educational officer of the State in which is located the dental school which the applicant seeks to enter.

(d) The entrance credentials of each student enrolled must be kept on file and open to general inspection until after graduation. Not later than sixty days after the opening of school the Dean shall send to the Secretary of the Dental Educational Council and to the Secretary of the local State Board of Dental Examiners a complete list of the students enrolled, together with a sworn statement that each student is possessed of the entrance qualifications outlined above.

(e) Students with two full years' credit from Class "A" Medical Schools, approved by the American Medical Associa-

tion, may be admitted to the sophomore class. No other advanced credit in time may be given in any other case than above specified. No special students shall be accepted unless they are in possession of the entrance requirements specified above.

(f) The foregoing regulations apply to all students, including those from foreign countries, and regardless of where the applicant expects to practice his profession.

COURSE OF STUDY.

Section 3. (a) Beginning with the session 1917-18 the course must be four years in length, each year to consist of thirty-two weeks and six days in each week. No degrees other than Doctor of Dental Surgery, Doctor of Dental Medicine, or Doctor of Dental Science may be given. Dental subjects may be taught throughout the entire four years. Schools that offer a three-year course with one year of college work as a pre-requisite shall not be regarded as satisfactory.

(b) The school must offer a course of at least 4,400 hours laboratory and didactic instruction.

(c) The minimum hours devoted to each branch shall be as follows:

Operative and Clinical Dentistry	1,300
Prosthetic Techniques	384
Crown and Bridge Techniques	320
Operative Techniques	160
Oral Hygiene	32
Dental Anatomy	96
Orthodontia	96
Oral Surgery	96
Physics, Biology, or both	192
Chemistry (Inorganic—Organic—Physiological—Metal- lurgy)	320
Technical Drawing	48
Anatomy	320
Histology	128
Pathology (General and Dental)	128
Materia Medica	64
Bacteriology	128
Physiology	128
Dental Rhetoric	96
Physical Diagnosis, Anæsthesia	32
Radiology	32

Jurisprudence, Dental History, Ethics, Economics....	32
Additions to above, or other subjects	268
Total	<u>4,400</u>

TEACHING FACILITIES.

Section 4. (a) The classes in dentistry must be taught separately from the classes in any of the other departments, if the dental school in question is part of a university.

(b) The patronage of the infirmary clinic must be such as to give each student at least 150 operations in fillings (gold, inlay, amalgam, cement, root fillings, etc.), prosthetic work, and orthodontia. Treatments preparatory to the above, and cases of exodontia must not be included in the number stated above.

(c) In the anatomical laboratory not more than eight students, working in pairs, may be assigned to one cadaver for a complete dissection.

(d) Every twenty students working in the infirmary at any given time must have the undivided services of at least one demonstrator.

(e) Every thirty students working in the scientific laboratories must have the undivided services of at least one instructor.

(f) Every forty students working in the technique laboratories must have the undivided services of at least one instructor.

(g) No persons except those holding the D.D.S., M.D., or bachelor's degree or equivalent, or who hold a license to practice dentistry, shall be employed as instructors.

LABORATORIES AND OTHER FACILITIES.

Section 5. (a) The school must be possessed of the following number of laboratories and class rooms, equipped in the following manner:

(b) One chemical laboratory equipped to adequately teach qualitative, quantitative, general inorganic and organic chemistry and physiological chemistry.

(c) One microscopical laboratory equipped with sufficient high power microscopic so that each student may be possessed of the use of a microscope when he is working in the laboratory.

(d) Sufficient class rooms—at least one of which must be equipped with lantern for projection.

(e) Sufficient technique laboratories, so that each student in attendance is provided with an individual place for laboratory work. (Not in senior room.)

(f) A dental infirmary, equipped with a sufficient number of dental chairs to adequately serve the senior class. An efficient equipment for sterilizing students' instruments must be provided.

(g) An X-ray outfit for use in conjunction with the dental infirmary.

(h) A dental library constantly available to the students, which shall have at least twice the number of volumes as there are students enrolled in the school.

STATE BOARD RECORD.

Section 6. The school must not have more than twenty-five per cent. failures before the various State boards more than two years in succession.

ATTENDANCE.

Section 7. The record of attendance required of students must not be less than eighty-five per cent. for each year.

PROMOTION OF STUDENTS.

Section 8. (a) A student who has incomplete course conditions, or failures, in 60 per cent. of his course for any semester shall be dropped.

(b) A student may not be promoted if he has incomplete conditions or failures in more than 20 per cent. of the course of any year.

(c) A student who fails to remove a condition or failure within twelve months from the time it was incurred shall automatically be dropped from the school.

(d) An incomplete course is one that has not been completed because of illness or other personal emergency.

PASSING MARK, CONDITIONS AND FAILURES.

Section 9. (a) The passing mark shall be 75 per cent.

(b) A grade between 60 and 74 per cent. is defined as a condition.

(c) A grade below 60 per cent. is defined as a failure.

(d) A condition may be removed by examination.

(e) A failure may not be removed except by repetition of the course in part or entirely, *i.e.*, by additional work under instruction approved by the Dean or the professor in charge of the subject.

(f) A condition which is not removed within thirty days of the opening of the next year, automatically becomes a fail-

ure, and can then only be removed by a repetition of the course.

(g) If a school grades by letters it shall state (publish) definitely the percentage range value of each letter used in designation of standings.

CLASS "B" DENTAL SCHOOL DEFINED.

Schools which in certain particulars do not meet the requirements for Class "A," but may become eligible for Class "A" without complete reorganization.

CLASS "C" DENTAL SCHOOL DEFINED.

Schools which could not meet the requirements for Class "A" without very extensive improvements and a complete reorganization. Class "C" schools shall be considered "not well recognized dental schools."

TRANSFER OF DENTAL STUDENTS.

Students of dental schools which have been well recognized but lost this recognition may transfer to well recognized dental schools, if acceptable to these schools. Such students may be accepted as far as entrance requirements are concerned on the requirements of the school in which the student began the study of dentistry.

Under Section 1, "Administrative Policy," another subdivision was added as follows:

"The conduct of a dental school for profit to individuals or a corporation does not meet the standard of fair ideals, as interpreted by the Dental Educational Council of America."

Under "Entrance Requirements," Section 2 (a), the following amendment was made: In the fourth line of the paragraph the following words were stricken out, "beyond the eighth grade of the elementary school," so that when amended this section reads:

Section 2. (a) The requirements for entrance shall consist of graduation from an accredited high school or academy which required for graduation not less than fifteen units of high school work obtained in a four-year course. No conditions on the foregoing entrance requirement shall be allowed."

Under Section 7, "Attendance," the following words were added:

"Attendance shall be counted from the close of registration," so that when amended this section shall read:

"Section 7. The record of attendance required of students must not be less than eighty-five per cent. for each year. Attendance shall be counted from the close of registration."

Under the head of "Promotion of Students," Section 8 (a) following amendment was adopted: Strike out the word "course" as it occurs in the first line of the paragraph, and substitute therefor the word "courses"; strike out the word "conditions"; strike out the words "60 per cent." and substitute therefor the words "40 per cent.," and add to the end of the paragraph the words "from his class," so that when amended Section 8 (a) shall read as follows:

"Section 8. (a) A student who has incomplete courses or failures in 40 per cent. of his course for any semester shall be dropped from his class."

Under Section 8 (b), the word "incomplete" was struck out, so that it reads:

"Section 8. (b) A student may not be promoted if he has conditions or failures in more than 20 per cent. of the course of any year.

The following classification of dental schools was adopted:

CLASS "A."

University of Southern California, College of Dentistry, Los Angeles.

University of California, College of Dentistry, San Francisco.

Northwestern University Dental School, Chicago, Ill.

University of Illinois, College of Dentistry, Chicago, Ill.

University of Iowa, College of Dentistry, Iowa City.

University of Michigan, College of Dentistry, Ann Arbor.

University of Minnesota, College of Dentistry, Minneapolis.

Creighton University Dental School, Omaha, Nebraska.

Ohio State University, College of Dentistry, Columbus.

North Pacific Dental College, Portland, Oregon.

University of Pittsburgh, College of Dentistry, Pittsburgh, Pa.

The Thomas W. Evans Museum and Dental Institute, University of Pennsylvania, Philadelphia, Pa.

Medical College of Virginia, School of Dentistry, Richmond, Va.

Marquette University, College of Dentistry, Milwaukee, Wis.

TENTATIVE CLASS "A."

Harvard Dental School, Boston, Mass., and Tufts Dental College, Boston, Mass.

Classification withheld until these schools meet the Council's requirements respecting the valuation of Entrance cre-

dentials. When this is done they automatically pass into Class "A."

CLASS "B."

Colorado College of Dental Surgery, Denver, Colo.
Georgetown University, School of Dentistry, Washington,
D.C.

Howard University Dental School, Washington, D.C.
Atlanta-Southern Dental College, Atlanta, Ga.
Louisville University, College of Dentistry, Louisville, Ky.
Chicago College of Dental Surgery, Chicago, Ill.
Indiana Dental College, Indianapolis, Indiana.
Loyola University, School of Dentistry, New Orleans, La.
Baltimore College of Dental Surgery, Baltimore, Md.
University of Maryland, Dental Department, Baltimore,
Md.

St. Louis University, College of Dentistry, St. Louis.
Washington University Dental School, St. Louis.
Kansas City Dental College, Kansas City, Mo.
Western Dental College, Kansas City, Mo.
University of Buffalo, Dental Department, Buffalo, N.Y.
New York College of Dentistry, New York.
College of Dental and Oral Surgery of New York.
Western Reserve University Dental School, Cleveland,
Ohio.

Ohio College of Dental Surgery, Cincinnati, Ohio.
Philadelphia Dental College, Philadelphia, Pa.
Vanderbilt University, School of Dentistry, Nashville,
Tenn.

University of Tennessee, College of Dentistry, Memphis,
Tenn.

Meharry Dental College, Nashville, Tenn.
College of Physicians and Surgeons, Dental Department,
San Francisco, Calif.

George Washington University Dental School, Washing-
ton, D.C.

CLASS "C."

Lincoln Dental College, Lincoln, Neb.
College of Jersey City, N.J.
Cincinnati College of Dental Surgery, Cincinnati, Ohio.
State Dental College, Dallas, Texas.
Texas Dental College, Houston, Texas.

ECONOMY IN MARRIAGE

Of all things pertaining to this life marriage is the most important, because it is not only of vital importance to ourselves, but shapes the destiny of millions of people yet unborn. Yet there is less common-sense used with regard to the people of the future than there is in raising domestic animals.

When a clergyman marries a pair of weaklings, or half-witted people, he may never stop to think of the crime, or perhaps he may try to persuade himself that somehow the Lord will provide sound, sensible children from such a union, forgetting that God is not mocked. "Whatsoever seed a man soweth the same shall he also reap," and also forgets "like will beget like."

The present great war is sure to result in a weakening of the people engaged in its carnage. It is therefore our duty to learn what we can from this calamity and set about to recover ourselves as quickly as possible. In order to bring about this desired end, we can adopt the same or similar method of examining people for marriage that is now used to examine them for war. The plan proposed is simple, and should appeal to our common-sense, which plan is as follows:

No one is permitted to marry before the age of twenty years. At this age, everyone, male or female, must go before an examining board of medical and professional men and women for examination as to physical health, mental condition, size, strength, form, eyesight, hearing, etc. Also, if there is any disease lurking in their system that would result in weakening their children or prevent them of having children. Everyone should be rated in one of four classes—A, B, C and D—according as the examiners find them. Class "A," which should represent about half the people, would be those who are found to be sound in body and mind, healthy, moral, and of the best type. Class "B" would be those who would be equal to Class "A," excepting for some one or two defects, such as being maimed or crosseyed, or under size, or any other slight defect that would not be inherited by their children. Class "C" would be all those who are under size with some physical weakness or disease that would handicap them, or might be transmitted to their children. Class "D" would be all idiots, insane, cripples, weaklings, blind, dumb, foolish or diseased especially, such diseases as would be inherited or result in some other weakness in future generations.

Class "A" would be advised to marry as soon as convenient after 20 years of age. Class "B" would not be permitted to marry before the age of 25. Class "C" would not be permitted to marry before their 30th year. Class "D" would not be permitted to marry before their 45th year. Every one is supposed to marry in his or her own class, or Class "A" and "B" may marry each other, or "B" and "C" may marry, but "A" and "C" must not marry, and "D" must not marry anyone out of their own class.

All unmarried people at 25 will be re-examined, also all unmarried people at 30 will be examined for the third time, so that there will be a chance for re-classing in the event of any contracting disease, or have their health sufficiently improved to warrant entering a better class.

At the time of examination the clients will be advised as to the proper selection in marriage. Each will receive his or her health certificate, which will serve as the marriage certificate, and will be registered at the county or provincial registry office at the time of examination.

Of course, no clergy will be permitted to marry without the health marriage certificate, which will contain the class, description, measurements, weight and photos of the persons presenting themselves for marriage.

It is not necessary to point out the many advantages in a system like this, but how can such a radical change in our present system be brought about? The answer is, by simply making it our religion and law.

It is just as easy to say, "Thou shalt not marry an idiot" as it is to say, "Thou shalt not marry thy grandmother." Had the authors of our religious doctrines been alive to the importance of proper marriage we would have been in a heaven on earth long before this.

PHYSICAL AND LABORATORY DIAGNOSIS FOR DENTISTS

DR. HALTON, Chicago.

Excerpts from address before the Toronto Dental Society.

No one contribution to the practice of dentistry and medicine has turned the attention of people in general more to the teeth and investing tissues than that of the theory of focal infection. This operates in two ways: In the first place it increases the responsibility of the dentist, and, therefore, in the second place, it invests his profession with a new dignity and rating higher than formerly assigned to it. Greater things are expected of the practice of dentistry than merely the maintenance of the masticating machine, or in a common phrase, "running a mouth repair shop."

With this broadening of the field there is a tendency to hold the dentist more and more responsible for methods and information that formerly were more or less exclusively those of the physician. To a certain extent this is more true in the field of diagnosis than in any other branch, and it is to this field that I am going to limit my scrutiny to-night. I am going to be concerned with the reasons why dentists should be familiar with diagnostic procedures, and not only that, but with their actual performance in certain cases.

There are a number of factors that thrust this matter of physical and laboratory diagnosis on to the dentist, and they are as follows:

First, the matter of anæsthesia. No anæsthesia, even that of a local one, is without some danger, and that danger is materially increased in certain forms of physical disability. As dentists we are very much interested in avoiding untoward results in our anæsthesias, and complete and ultimate success in this proposition is dependent on information that can only be gotten by some form of physical or laboratory examination.

In the second place, as I have already suggested in the preceding statements, the relationship of mouth infections to disease elsewhere in the body has sharpened our interest in disease manifestations outside of the mouth. In spite of himself the dentist is obliged to take an interest in what is going on in the organs and tissues of the body in general. To do this properly he is dependent on the methods of physical and laboratory diagnosis.

The third reason results from the preceding two. Let us call it the medico-legal relationship of the dentist. We are facing new social and legal institutions that have to do with a multitude of factors, such as Workmen's Compensation Acts, many forms of accident and health insurance, school inspections, and preventive medicine and dentistry. As a result of the theories of the relationship of mouth infections to disease elsewhere in the body your examinations and the records that you keep of them are of prime importance in the settlement of such cases.

In the fourth place, dentists are being more and more called into consultation with internal medicine men and other specialists in the so-called group study of cases by which it is expected to arrive at a more refined diagnosis and outline a more satisfactory and scientific course of treatment.

In the fifth place, the present war is a large factor, but it is hard to determine just how and where it belongs. It is possible to say that large numbers of our young men have had experiences and contacts that will influence all professions and all forms of legal and social activity to unknown degrees for years to come. Medically and surgically (and this includes dentistry they have seen, and in a large number of cases have actually experienced the beneficent results of various forms of professions, co-operation and activity. Hospitals, infirmaries and dental practices of the highest types are familiar to them. They will undoubtedly attempt to "carry on" in civil life such activities as seem to them worth while. They will have become familiar with many of the commonly accepted examinations, medical tests and procedures. Their standards will be more or less fixed by what they have seen and heard during these new contacts.

I am convinced that a dentist must be familiar with the methods of physical examination in general use in order to do his part in this great work to his greatest advantage. Some he should know how to perform, others he should know the interpretation, but not the details of the performance; there is a third group which he should be able to understand in a general way, and finally a fourth about which he need be concerned not at all.

At the time of the first presentation of the patient not only should an exact examination of the conditions existing in the mouth be made, but this should be spread to a general estimate of the individual. Any apparent deviation from the normal in these general respects should have a rather careful

attention, and, if possible, related to the mouth conditions found. Apparently Barker's (4) classification of the items that are to be included in such an examination are more than sufficient, and it follows:

1. Body temperature, pulse rate at both wrists, respiration.
2. Height, weight, relation to average calculated weight, nutrition, musculature.
3. Posture, gait, behavior.
4. Skin.
5. Hypertrophied glands, bones, joints, muscles.
6. Blood pressure.

Except item 6, these are those that are familiar to all of us, whether professional or laymen, and very nearly correspond in many points to those covered by the army examinations. There are three things I should like to emphasize, for I believe a careful record of them concerns the work of dentists. The first one is temperature, the second is nutrition, and the third is pulse rate. The reasons for the first two are obvious. There is always a possible connection between temperature and some dental condition, and this is also true of nutrition. Recently in examining young men of draft age I have been astonished at the large number of rapid pulses. There was only one other factor that presented itself with the same regularity, the equally striking number of defective teeth. Of course, it is pushing the mere fact of coincidence pretty hard to say that there is here any relationship of cause and effect. There are other factors to exclude first, but even after those of excitement, the influence of tobacco, and such intoxications as goitre are ruled out there is remaining a very considerable number still unaccounted for, and which have been allowed to go to the cantonments for the army surgeons to dispose of as they see fit. These men belong to a group known as "irritable hearts." Occasionally they have been discussed under the heading of "Soldier's Heart, or Irritable Heart of Soldiers." This rather large group concerns dentists, because it has been found repeatedly, and by repeatedly I mean, by many observers at different stations, that such hearts are in a large number of cases susceptible to a treatment that consists of just two things: (1) The removal of a focus of infection possibly about the mouth and teeth, and (2) graded exercises.

Blood pressure is a measurement that can be easily taken and should be a familiar technique of dental offices. It offers information in two classes of cases. One group is covered by

the pre-anæsthetic, pre-operative use of this test. The other as a means of verifying a possible effect of focal infection.

The examination of the body may be grouped either by regions or by systems. The examination of the various systems as such seems to be quite out of consideration, except in so far as it concerns the respective specialties. On this account for our purposes the regional division is much more satisfactory. The examination of the head region should be thoroughly comprehended by the dentist, for this includes his chosen field and the region just adjacent to it. He should not be held responsible for the examination of the special senses, nor of the nervous system. But the conditions of the adjacent structures, the tonsils, the glands of the neck, the tongue, the accessory sinuses of the skull bones all have some possible connection with his work. This includes such special methods as transillumination and the use of simple electrical apparatus.

The examination of the chest region holds two points of interest, the heart and lungs—especially the former. I am sure that it is not fair to expect that a dentist will become expert in the use of a stethoscope so as to distinguish the finer chest sounds; that he will be able to percuss with any great ability; but I do believe that he can locate the apex beat, and that he can learn to distinguish with the stethoscope between the sounds that certainly those of a normally acting heart and those of one that is the seat of some unusual sound. Then having gone so far as to determine that some defect does exist, he can insist that his patient must have a physician's examination and recommendation before he will be allowed to submit to an anæsthesia, or to the removal of a large number of teeth, or in an elderly person or invalid the removal of even a single one.

The actual performance of laboratory tests is a matter of technical skill that can be mastered by a laboratory technician who need not be either a doctor or dentist. Often nurses make very capable technicians, and do the work even more faithfully and conscientiously than their professional teachers. They cannot interpret the tests, but that is often an advantage. It is, therefore, possible to make one laboratory supply a considerable group of men, both dentists and physicians, a laboratory that will do a large amount of work reliably and at a rather small expense, provided there is at least one individual member of the group capable of training and supervising the technical assistant.

Dental Societies

EDUCATIONAL COMMITTEE OF THE CANADIAN DENTAL ASSOCIATION—BIENNIAL REPORT

To the President and Members of the Canadian Dental Association:

Your Educational Committee (the Canadian Oral Prophylactic Association) begs leave to report as follows:

The members of the Canadian Dental Association who are able to attend will enjoy the joint meeting this year with the National Dental Association at Chicago. The members of the Executive of the National Dental Association, in extending an invitation to our Association to meet with the American Association, have shown themselves to be indeed allies. Our meeting together will be the means of bringing the members of the dental profession in both countries still closer together, and much good is sure to result from that more intimate relationship. The contributions on war dental surgery to be presented at the meeting by Canadian Army Dental Surgeons will not only be of interest to the members of both Associations, but will be of inestimable value to our American brothers in dentistry just now entering upon their duties as dental surgeons in the army.

During the two years since the last meeting of the C.D.A. in Montreal a great deal has been accomplished in the way of education of the public and the army in the matter of the care of their mouths and teeth. Some assistance has been rendered the Army Dental Corps by this committee in its efforts to improve the mouth conditions of the men serving in the army. Many of these men had never before received dental service, and the knowledge they have received will prove beneficial to them throughout their lives.

Military Dental Educational Cards.—Your committee prepared a set of large cards of an educational nature for use in military dental surgeries. Several sets of these were sent to the dental surgeries throughout the Dominion, and the comments received from the officers commanding were very encouraging. The cards apparently attracted the attention of a deputation from the United States Government who visited Canada recently to study the system practised here of educating the returned soldiers to re-enter private life, for a request for a set came from the Director of the Federal Board for Vo-

ational Training, Washington. Your committee was pleased to supply them.

Military Leaflets.—A small leaflet was also prepared. This leaflet contained simple instruction for the soldier in the care of his teeth. Twenty thousand of these were sent to the different camps and were distributed to the men receiving dental treatment. This little leaflet proved so popular that the supply has been exhausted, and another twenty-five to forty thousand will be printed to supply the demand.

School Dental Educational Cards.—During the past year your committee prepared a set of display cards for use in teaching oral hygiene in public schools. Through the courtesy of the Board of Education, Toronto, Department of Medical Inspection, it was possible to secure most of the cuts used some time ago by the Oral Hygiene Committee of the Ontario Dental Society in the production of similar cards which had been originated by the late Dr. W. H. Doherty. Unfortunately some of the cuts had been lost in Montreal, which necessitated having others made to replace them. The original set contained twenty-five cards, but your committee has somewhat revised them, and the set now comprises twenty-one cards. A set of these has been placed with a number of oral hygiene committees in the various provinces for use in dental educational work, and they may also be purchased by schools at actual cost. The Education Department of one of the provinces has asked your committee for a price to supply two thousand sets for use in the schools of that province. In large quantities like this these cards could be produced at a very low figure.

Pamphlets.—Since the last meeting three pamphlets have been printed and sent out to every dentist in Canada so far as names and addresses were available. These were: "The Pathology of Dental Infections and Its Relation to General Diseases," by Weston A. Price, D.D.S., D.Sc., Cleveland, Ohio; "Mouth Infection as it Affects the General Dental Practitioner," by M. H. Garvin, D.D.S., Winnipeg, Man.; "Mouth Bacteria," by W. J. Gies, M.D., New York. The contributions of Drs. Price and Gies were addresses delivered at annual meetings of the Canadian Oral Prophylactic Association, when a large number of physicians and dentists other than the members of the C.O.P.A. were present. That of Dr. Garvin was the second prize essay of the Research Competition conducted by your Educational Committee two years ago.

Canadian Dental Research Competition.—In this competition the sum of one thousand dollars was given in prizes for the three best original contributions to the science of dentistry. These prizes were won by Dr. Harold Box, Toronto; Dr. M. H. Garvin, Winnipeg, and Dr. W. E. Cummer, Toronto, in the order named. The prizes were presented in person to Drs. Box and Cummer at the annual meeting of the C.O.P.A., held in Toronto in January of last year. The presentation was made in the name of the President of the Canadian Dental Association (Dr. Nolin, of Montreal) by Capt. F. W. Barbour, of Fredericton, N.B. At the same time Dean Webster, of the Royal College of Dental Surgeons of Ontario, presented in the name of the C.O.P.A. suitably engraved medals cast from gold. Dr. Garvin was unable to be present at the meeting, and his cheque and medal were forwarded to him. Many difficulties were encountered by the committee in its effort to prepare for publication the work of Dr. Box, which necessitates the making of a large number of cuts from microscopic slides, and this has been left in abeyance for the time. Dr. Cummer's contribution has already appeared in some of the dental journals. The judges in this contribution were Drs. C. N. Johnston, J. Leon Williams and Edward C. Kirk, to whom your committee desires here to offer its sincere thanks. One of the medals may be seen at the exhibit of the Canadian Oral Prophylactic Association at this meeting.

Skeleton Lectures.—Since the last meeting your committee has completed the skeleton lectures which were in preparation by the late Dr. W. H. Doherty at the time of his death. There are four of these, and they contain just an outline under the following headings: "The Teeth, Their Use and Abuse," "Mastication," "Children's Teeth" and "Tooth Decay, Cause and Prevention." A large number of lantern slides have been made for the illustration of these "talks," and are available for committees or dentists doing oral hygiene educational work. Slides and outlines are sent by express upon request, and are constantly being used all over the Dominion. The secretary has many letters of appreciation from men who have availed themselves of the opportunity of using this material.

Moving Picture Films.—Your committee has now three different films, with a duplicate copy of two of them, making in all five films. These are in great demand, and have been shown in a large number of places from coast to coast. They are available for educational work without cost, as is all ma-

terial of the C.O.P.A. These films are known as "The Toothache Film," "The Oral Health Film," and one showing the "Proper Method of Brushing the Teeth." The Provincial Board of Health has been showing two of these films almost constantly with its Public Health Exhibit throughout Ontario.

Department of Dental Research.—Although perhaps not directly the business of the Educational Committee of the Canadian Dental Association, an event which will probably be of very great importance to the dental profession of Canada should be made mention of in this report. During this year a Department of Dental Research has been established in the University of Toronto. This university maintains a Research Faculty, through which a great deal of work is being done along commercial and professional lines, but up to this year, however, there has been no provision for dental research, financially or otherwise, in the University of Toronto. The Canadian Oral Prophylactic Association has agreed to provide a thousand dollars a year, or more if they can afford it, to help on this good work. At present there is one Fellow engaged in the pathological laboratory during dental research work under the direction of the head of that department, Professor McKenzie, who is working in conjunction with Dr. Harold Box. Your committee hopes that similar faculties for investigation of dental problems will be established wherever possible throughout the Dominion.

Your committee has not seen fit to make a report in detail at this meeting, because of the volume of work that is now being done over a very wide area.

The moving picture films, the skeleton lectures, with slides, display cards, pamphlets, etc., are constantly being sent to dentists all over the Dominion, and a complete report would be too long, and is probably unnecessary. Suffice it to say that the material supplied by this committee is highly appreciated by the men who are giving "talks" to gatherings of different kinds, and also by some of the provincial societies who have used our films at their meetings.

A financial statement of the Canadian Oral Prophylactic Association, covering a period of two years, from January 1st, 1916, to January 1st, 1918, appears on the next page. This report shows an expenditure of twenty-three hundred dollars for educational purposes. From January 1st of this year to date a further sum of two thousand dollars has been expended, making in all a total of four thousand three hundred dollars used for educational work since this committee's last

report. The sum of one thousand dollars for prizes in the research competition is not included in the amount, as this was shown in the previous report.

All of which is respectfully submitted,

HORACE E. EATON, *Chairman.*

GEORGE W. GRIEVE, *Secretary.*

2 Bloor Street East, Toronto,

RECEIPTS AND EXPENDITURES—TWO YEARS.

To cash in bank, January 1st, 1916	\$2,453.97
Bank interest	165.19
Royalty collected for paste and powder	4,135.62
Royalty collected for brushes	5,582.62
Membership fees	8.00
Interest on deposit of \$1,000 (research fund)	66.20
Sundry receipts	46.19
Cheques outstanding	188.23
	<hr/>
	\$12,646.02

Charity and Educational Expenses.

Concert and lecture to soldiers	\$ 23.00
Expenses, Secretary Educational Committee	106.85
Expenses, Research Competition	223.01
Expenses, Dr. Weston A. Price's lecture	226.30
Exhibits at conventions	130.59
Postage	88.00
Educational equipment—	
Charts, lantern slides, preparation of lectures, pamphlets, military, dental and display cards, films, literature	782.95
Donations—	
Hospitals, Charitable Institutions, etc	395.90
Grant to Canadian Army Dental Corps	50.00
Brushes to colleges	97.74
Brushes, paste, powder and money to the Women's Auxiliary of the Canadian Army Dental Corps..	103.25
Hospital for Sick Children.....	76.64
	<hr/>
	\$2,304.23

Business Expenses.

Annual and special meetings	\$ 178.40
Seals	437.89
Typewriter	50.00
Printing	175.25

Sale of brushes	\$ 67.63
Cartons for brushes	73.45
Government fees	3.00
Renewal patents	57.50
Solicitor's fees	47.13
Guarantee bond	10.00
Rent	72.00
Advertising	30.00
Wages, agent and secretary's assistant	1,682.67
Secretary's expenses	137.97
J. Palmer & Son, Dupont brushes	1,318.66
Incidentals	78.27
	<hr/>
	\$4,419.82
Educational expenses	2,304.23
10 per cent. of \$2,000.00 Victory Bond	200.00
Cheques outstanding from 1915	3.48
Cash in bank, January 1st, 1918	5,718.49
	<hr/>
	<u>\$12,646.02</u>

(Signed) A. J. BROUGHTON,
Hon. Secretary-Treasurer.

DENTAL RESEARCH COMMITTEE OF CANADA

REPORT OF RESEARCH COMMITTEE, CANADIAN DENTAL ASSOCIATION, 1918.

Owing to disturbed conditions in the Canadian Dental colleges and throughout the profession, due to the war, your committee is not able to report as great progress as it would wish.

At the last meeting of the Canadian Dental Association, held in Montreal, in 1916, the following were appointed Research Committee for the Canadian Dental Association:

Prince Edward Island—Dr. J. S. Bagnall.

New Brunswick—Dr. Hagerman.

Nova Scotia—Dr. Frank Woodbury.

Quebec—Dr. Louis Jack.

Ontario—Research Committee appointed by the Board of Directors, R.C.D.S.

Manitoba—Dr. Garvin.

Saskatchewan—Dr. S. Moyer.

Alberta—Dr. Verrinder.

The Executive of the C.D.A. decided that the Ontario Research Committee should act as Executive of the Canadian committee.

Your committee has kept in mind the importance of linking up, so far as possible, clinical observations by practising dentists with scientific laboratory tests.

The committee sent out a questionnaire upon the question of "Eruption of Teeth," to some sixty dentists, who, it was thought, would be specially interested.

CLINICAL RECORD OF DATE OF ERUPTION OF TEETH.

A "date of eruption" chart was prepared with two sections: one for the deciduous teeth, and the other for the secondary teeth, with two columns in each section. The first column to record the exact age at the first appearance of the tooth, and the second, the age of full eruption. Also spaces were made available for notation of family dental history, and the probable cause of premature or retarded eruption.

The committee is not yet in a position to report on the result of this questionnaire, but the interest of dentists has been shown by a request for further charts.

Regarding laboratory research, your committee would urge that an effort be made to assign to every dental college in Canada a specific problem to be worked at in their own laboratories.

REPORTS OF DENTAL COLLEGES.

Dalhousie reports interesting research work by Dr. Ritchie and his colleague, Dr. F. W. Ryan, consisting of Root Canal Preparation, Treatment and Filling. The various methods in use were submitted to a rigid microscopical examination, the results tabulated and conclusions drawn.

Also, a critical study of the organic contents of the dentine, its relation to focal infection and a method of preventing the same through fixation of the tissues by means of histological technique and an agent suggested by Dr. Ritchie, not hitherto used. The report will be published later.

At the Royal College of Dental Surgeons, Dr. Harold Box reported to the committee as follows:

"Time was given to the problem of the histo-pathology of Alveolar Abscess. While this work, as a whole, is unfinished, yet we have been able to complete some phases of the problem, particularly that relating to granuloma and cysts.

"Important work has also been undertaken in connection with the co-relation of some of the common clinical gingival

pictures, with the histo-pathology of the cases in hand, special reference being given to the cause and treatment."

Professor Lancaster, of the Department of Chemistry, R.C.D.S., was asked to supervise the expenditure of a grant of \$100.00 upon investigations made in the college laboratory and at the laboratories of the Provincial Board of Health. The subject selected for investigation was "The Presence or Absence of Free Sugar in the Saliva Under Various Conditions." Professor Lancaster reports as follows:

"This research is well under way. We have made progress sufficient to lead us to hope for a valuable report. Details will be ready in the course of a few months."

Reports from other dental colleges were not received in time for this report.

The Board of Directors of the R.C.D.S. made a grant last year to the work of this committee, and has now made a further grant of \$100.00 to the Research Committee for the coming year.

PLAN OF ORGANIZATION.

Your committee begs to recommend the following plan of organization for Dental Research in Canada:

Name.

There shall be appointed a committee, to be known as the Dental Research Committee of Canada (D.R.C.C.).

Members of Committee.

(a) There shall be a Research Committee in each Province, appointed by the Provincial Board, and composed of three members, or more, representing the several dental organizations of the Province.

Each Provincial Committee shall carry on research organization and work, in their respective province, under the direction of the Executive of the D.R.C.C.

(b) The chairman and one other member of each Provincial Research Committee shall be members of the D.R.C.C.

Meetings of Committee.

The D.R.C.C. shall meet at the time of each meeting of the Canadian Dental Association.

Members of Executive.

At each meeting of the D.R.C.C. a president, secretary and treasurer shall be appointed, and these officers, along with the president of the C.D.A. and chairman of the Finance Com-

mittee, and the members of one of the Provincial Committees, to be named by the D.R.C.C., shall form the executive of the D.R.C.C. for the ensuing term.

Objects.

1. To carry on among the dental associations and dental colleges of Canada an intensive study of the perplexing problems which confront our profession, and to investigate, scientifically, current methods in dental practice. Where possible, the work to be done under the direction of the head of the department by a recent graduate, who, during his college course, has shown special ability in this line of work.

2. To give assistance, through the laboratories, library and other facilities at the college, to members of the profession in their efforts to find satisfactory solutions for the difficult problems which they meet in practice.

3. To give financial, or other assistance, to some worthy member of the profession who is struggling with some great problem and making sacrifices far beyond his means.

4. In short, to serve humanity and the dental profession by investigation, study and research in connection with oral defects and disorders and their consequent systemic lesions, and all other matters pertaining to the science and practice of dentistry.

Finances.

1. Each provincial association will be expected to collect, as part of their annual fee, an extra dollar, to be sent to the treasurer of the D.R.C.C.

2. Every other dental society and board in the Dominion will be requested to make a grant to the D.R.C.C.

3. Individual members of the profession will be invited to become sustaining members by giving a liberal contribution or a fixed amount each year.

4. The members of the profession will be expected to inform and educate their patients in regard to the benefits humanity will derive from this important work, and thus encourage them to give financial assistance.

5. When the committee makes a grant to any college in connection with any special study to be undertaken at the said college, the governing board of the college will be expected to render the undertaking generous financial assistance.

6. As the work progresses, an effort will be made to raise an endowment.

R. GORDON McLEAN (Chairman).

FRED J. CONBOY.

HAROLD CLARK.

A. E. WEBSTER.

H. M. LANCASTER.

W. E. CUMMER.

A. D. A. MASON.

HAROLD BOX.

G. R. ANDERSON.

WALLACE SECCOMBE (Secretary).

The report of the Research Committee was unanimously adopted by the Canadian Dental Association, and the appointment of one of the Provincial Committees to act as the Executive of the D.R.C.C. was left to the new C.D.A. Executive.

The C.D.A. Executive subsequently met and appointed the Ontario committee to act as the Executive of the D.R.C.C. for the ensuing term.

TORONTO DENTAL SOCIETY

The first meeting of the Toronto Dental Society for the coming season was held in the Pompeiian Room of the King Edward Hotel, on Monday evening, November 4th, at 6.30 o'clock. Immediately after supper Dr. E. Hatton, of the Northwestern Dental College, Chicago, Ill., spoke on "Physical and Laboratory Diagnosis." The relation of mouth conditions to the general health, and the influence of one upon another, are subjects which are engaging the thoughts of both dentists and physicians. Dr. Hatton has been making a special study of these subjects for some time, and will show how the dentist may be helped in the treatment of his patients by a knowledge of their physical condition, as shown in a physical examination.

The X-ray as an aid to the general practitioner will be discussed at the second meeting, which will be held in December. "What should we expect to learn from a skiagram, and what are its limitations?" Dr. Lloyd Rogers, of Detroit, Michigan, will present this paper.

The January meeting will be addressed by Dr. E. Pullen, of Buffalo, N.Y., on "The Importance of Early Diagnosis of Irregularities of the Teeth." Too often the dentist is prone

to overlook conditions in the mouths of young children, which simple measures would correct; but when allowed to continue for some time, require extensive orthodontic operations. Dr. Pullen will also give suggestions for the general practitioner on the management of children in the office.

The subject of root canals is too important to be omitted from our programme. In other years we have had papers read dealing with the relation of the infected apex to general systemic lesions. This season we will have a paper outlining a method of root canal filling. Dr. E. Coolidge, of Chicago, while a comparatively young man, is recognized in dental circles in the United States and Canada as a man of outstanding ability, and able to present this matter in an interesting way.

• Notice of the speaker and the subject for the final meeting will be forwarded later.

The membership fee is the same as last year—ten dollars (\$10.00)—which includes the cost of supper at each meeting. Every ethical practitioner is cordially invited to become a member of the society. It will greatly assist the committee if you will pay the fee promptly on receipt of this notice, to the treasurer, Dr. H. A. McKim, 418 Roncesvalles avenue, or to any of the Membership Committee.

J. E. RHIND, D.D.S., President.

W. H. COON, D.D.S., Secretary.

DENTAL EDUCATIONAL ASSOCIATION OF TORONTO

This association was organized and set on foot November 7, 1918. Dr. Conboy was elected president, Dr. Harold Clark vice-president, Dr. Amy treasurer, and Dr. McKim secretary. The opening address was delivered by Lieut.-Col. Hume, just returned from Orpington Hospital, England. The subject was "Fractures of the Jaws and Their Treatment." The next subject will be "Physical Diagnosis," by F. Arnold Clarkson.

The work of the association is divided into general sessions and study clubs. There are several subjects already under intensive study. Over thirty members registered for the study.

CANADIAN ARMY DENTAL CORPS, OVERSEAS

The C.A.D.C. overseas is receiving much praise for establishing a method of accounting and keeping track of stores that is likely to become imperative in all other departments.

One of the great difficulties during the early period of the war was to get authority to purchase necessary equipment and supplies. Now there is some difficulty in preventing stores becoming filled with more supplies than are necessary. The situation is no different in Canada from overseas. The O.C. in each district knows that certain articles are hard to get, and a failure to get necessary supplies when needed may stop work in all his surgeries, consequently he gets all he can of the scarce articles; in this way large stocks are held in each division as a guarantee against shortage. While this is good business and commendable foresight for each officer, yet when each division has an excess over immediate requirements it makes a great drain on the total available supply. There are many dental instruments unobtainable for civil needs at the present time, because the Government has taken up the full supply, and it is quite possible that some of these instruments are not in immediate demand, but are kept in stores all over the country.

It is just this very situation the C.A.D.C. overseas has found it necessary to cope with. They have made a vocabulary covering 1,266 articles. To quote: "One of the most difficult things our stores have to contend with has been the tendency of officers to order quantities of materials in excess of the requirements of their clinic. Form 5012 is designed to remedy this, and is rendered at the end of each month by each clinic. It shows the number or quantity of each article on hand to begin the month, the amount used during the month, and the balance on hand, so that when an indent is sent forward for the next month's supplies the A.D.D.S. can note whether in his judgment it is reasonable or not."

Officers have been known to make extravagant orders on the stores at headquarters; orders which would take more than the total world supply of the article at the time. From the size of the tenders sent out from headquarters it would seem that supplies in excess of requirements are often held at headquarters. But an officer whose clinics were held up for supplies which were at one time available might be criticized. The available supply for both civil and military should be controlled and distributed according to the needs of each.

Editorial

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VOL. XXX. TORONTO, NOVEMBER 15, 1918. No. 11.

WHAT HAS THE TREATMENT OF WAR WOUNDS REVEALED TO THE DENTIST?

Control of infection in the treatment of wounds has simmered down to three methods—*injection of sera*, application of chemicals and the mechanical removal of the bruised and infected tissue. So far as war surgery is concerned the injection of tetanus sera is the only one used as a prophylactic measure for wound infection. Sera prepared for the ordinary pus infections do not seem to have succeeded any too well.

It would seem that in the field of chemicals much was expected in the early days of the war, and much work was done. Some drugs or chemicals were used with the idea of directly destroying bacteria; others with the notion of destroying necrotic tissue, while others were used to promote the flow lymph. Among the most widely used of the chemicals is the Dakin solution—a neutral sodium hypochlorite solution containing no boric, but a mixture of carbonate and bicarbonate. Dakin discovered that the destruction of bacteria was a chemical process, and that the chemical has to be brought into intimate contact with the bacteria. To do this he introduced

the method of flushing infected wounds every two hours, having the solution carried to the remotest recesses of the wound by small rubber tubes. As soon as the wound was free from infection it was at once closed. Lorain Smith introduced a mixture of calcium hypochlorite and boric acid under the name of ensol. Some of the synthetic dyes were also used. The latest introduction is dichloralmine T, by Dakin, and a mixture of bismuth iodiform and parafin by Morris. It was discovered that chemicals to be effective must be constantly applied, because they are used up by their action on the bacteria, hence that chemical is the most effective which is easiest applied. In fact, it has again been discovered that a drug is not effective when not in contact with the substance to be acted upon.

It has been in the department of mechanical surgery where the greatest success has been achieved. All bruised, necrotic and infected tissue is removed from wounds at the earliest possible moment and immediate closure made. No antiseptics, disinfectants or chemicals of any kind are used; simple asepsis alone. Purely a mechanical procedure.

How far have the practices as developed in war surgery during the past four years coincided with the observations and practices of dentistry? It has been shown to the dental profession and to the public in general that no amount of chemicals as may be applied to the teeth will influence the incidence of dental caries. This was not done without much debate, discussion and loss of time and treasure. It has also been shown that no amount of drugs that can safely be used in the teeth will destroy the bacteria in tooth tissue, nor successfully destroy bacteria in a blind abscess. It has been shown by Price and others that drugs as soon as they become active in destroying bacteria lose their potency, hence it is useless to put drugs into a canal or abscess cavity once every few days and expect results. Carrel found that active drugs should be applied every few hours to get any results. Dentists, after years of faith in drugs and the following of whims of this and that discovery so-called, have found abiding results only in mechanical procedures. Dentists have long since left the administration of drugs to others for dental caries and chronic suppurative peridontitis or perichlasia. They have no faith in drugs applied to carious dentine as a means of prevention or cure. The chronically infected peridental tissues are no longer dosed with creosote, cloves, phenol, for-

maldehyde or other chemicals. Dependence alone is placed in a mechanical procedure as a help to recovery.

It is gratifying to know that the greatest minds in war surgery have arrived at the same general methods of treating infected wounds as that in general practice in dentistry. The best practice is to remove by mechanical means all the infected tissue and set the parts at rest without resort to chemicals. If chemicals are used at all they must be for the removal of neurotic tissue and direct destruction of bacteria, without having any effect on the vital cells of the human body. Chemicals never cure.

PURCHASE OF ALCOHOL BY A DENTIST

During the past year or more it has come to the notice of dentists that druggists would not sell absolute alcohol to a dentist in quantities greater than six ounces. In the Consolidated Temperance Act and amendments, section 128, sub-section A, page 60, it will be found that a dentist may have in his office or purchase a quantity of ethyl alcohol not to exceed one quart, upon his own written request. This is in excess of any other quantity of whiskey or spirits he may have. Dentists who have had any difficulty in this matter can get a copy of the Act and amendments on application to the department, which would no doubt clear up the matter.

Editorial Notes

Captain Arnold Semple, C.A.D.C., has been promoted to the rank of major.



The Royal College of Dental Surgeons has the largest registration in its existence.



The "flu" compelled the close of the Royal College of Dental Surgeons for three weeks in October.



There were more fractures of the mandible in the Russian army than of any other bone.



Dr. W. McDerment, Lucan, Ont., Fred Coughlin, Guelph, Ont., and W. T. Hackett, Winnipeg, Man., have had special mention for services overseas.

In accordance with military regulations, a number of dental students who have been overseas have returned to Canada to complete their dental studies.

✧

Dr. C. W. Currie, of Thamesville, died of heart trouble October 1st, 1918. Dr. Currie had practised in Thamesville ever since graduation from the Royal College of Dental Surgeons in 1898.

✧

A citizen who is not interested in the education of his children or of other people's children has no right to a place on this earth. A dentist who is not interested in dental education has no right to have a license to practise dentistry.

✧

Capt. Duff, C.A.D.C., who was wounded in a hospital raid in France, has returned to Canada. The wound in his arm is recovering rapidly, and from every appearance will permit his discharge in a few weeks, when he will rejoin the staff of the Royal College of Dental Surgeons.

✧

A woman of wide acquaintance among dentists recently said in the hearing of a dozen or more people that many dentists almost never wash their instruments with soap and water, much less sterilize them. In fact, she named three or four such dentists as examples of a large number. Will somebody awaken these men before the Provincial Board of Health is compelled to take a hand.

✧

Canada Journal of Dental Science was published for four or five years beginning 1868. Dr. George W. Beers was the editor and publisher. There is a demand for these volumes by Dental libraries both in Canada and the United States. If any member of the profession should have one or more volumes, or even one number, the librarian of the R.C.D.S., Toronto, would be glad to communicate with him.

✧

Lieut.-Col. Guy G. Hume, whose picture appears in this number, was in charge of the jaw clinic at the Ontario Hospital, Orpington, England, and was returned to Canada on special duty to address the Canadian Dental Association in Chicago and give instruction to the profession on special war dental surgery. Col. Hume is now asking for his discharge, to take up his civil duties as professor of orthodontia in the Royal College of Dental Surgeons and resume private practice.

A few days ago the editor received a page torn from the "Canadian Forestry Journal" containing an advertisement of the University of Toronto. In the advertisement appeared the names of the Faculties of the University: "Arts," "Applied Science," "Education," "Medicine," "Forestry," "Household Science." The Dentist who sent the page wrote on it, "Why not Dentistry?" The answer is the Royal College of Dental Surgeons or, more correctly speaking, the School of Dentistry of the Royal College of Dental Surgeons is in affiliation with the University not as an integral part of it. The School of Dentistry bears the same relation to the University as Pharmacy, and Agriculture. The University gives a degree in these departments of learning, but does no teaching and gives no license. If Dentistry were a faculty of the University it would take full responsibility for the teaching and finances, while the Royal college of Dental Surgeons would grant the licenses.

Reviews

McConnell's Dental Pathology and Bacteriology. Publishers, W. B. Saunders Co.

This is a concisely written work expressly for dentists and dental students. It contains an immense amount of information in a small compass. There are chapters on disorders of metabolism and circulation, cell division, inflammation and regeneration, granulomas, tumors, special mouth bacteria, sterilization and disinfection, bacteriologic methods, specific micro-organisms, infection and immunity, laboratory technique. Dr. McConnell has had many years' experience in teaching dental students, and is well fitted to present the essentials on the subject.

* * *

Army Dentistry. Forsythe lectures for the Army Dental Reserve Corps. Edited by Frederick A. Keyes, D.M.D. Published by D. Appleton & Co., New York and London.

This is a most remarkable book in many ways. It is full of good general information that every dentist should know, whether in the army or not. It covers the whole field, from the latest theories of the cause and treatment of dental cases to how you groom a horse. It is well illustrated, splendidly printed and clearly written.

It opens with army administration and covers in detail the

subjects of asepsis and antiseptics, oral hygiene in relation to wound infection, anaesthetics, dental and oral prosthesis, dental and oral practice in the army and navy military law.

The chapters on military oral surgery are interesting because they bring the subject concisely to our present knowledge and then give in detail what has been gained within the past few years. The whole work is intended to cover a course suitable for dentists wishing to enter the army.

SPECIAL COURSE

War Prosthesis, Anesthesia, Physical Diagnosis, Fractures, Splints and Oral Surgery, to be held at The Royal College of Dental Surgeons of Canada, School of Dentistry, Toronto.

ONE WEEK. From Monday, 16th December, 1918, to Saturday, 21st December, 1918, inclusive.

Faculty.

LIEUT.-COL. GUY G. HUME, Officer in charge Dental Service at Ontario Military Hospital, Orpington, England; Vice-President Congres Dentaire Interallies; Professor of Orthodontia, Royal College of Dental Surgeons.

MAJOR W. E. CUMMER. In charge of Special War Prosthesis and Facial Restoration, Canadian Army Dental Corps, Military District No. 2. Professor Prosthetic Dentistry, Royal College of Dental Surgeons.—*War Prosthesis, Fractures, Splints.*

ARTHUR E. SMITH, D.D.S., M.D., Chicago. Special Instructor in Oral Surgery and Anesthesia, Loyola University Dental Department, New Orleans, and University of Tennessee, Memphis. Chairman Section Oral Surgery and Anesthesia, National Dental Association.—*General and Local Anesthesia, including Conduction Anesthesia.*

LEROY S. MINER, M.D., D.M.D., Boston, Assistant Professor Oral Surgery, Harvard University; Oral Surgeon Massachusetts General Hospital, Massachusetts, Homeopathic Hospital, and Forsyth Infirmary for Children, Boston.—*Oral Surgery and Physical Diagnosis.*

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Dental Quarterly, September, 1917

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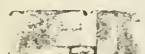
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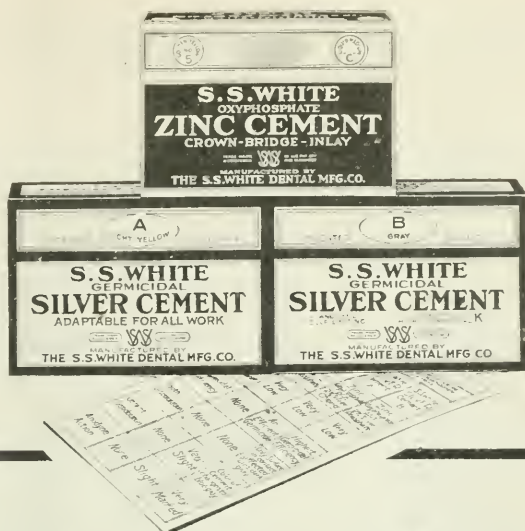
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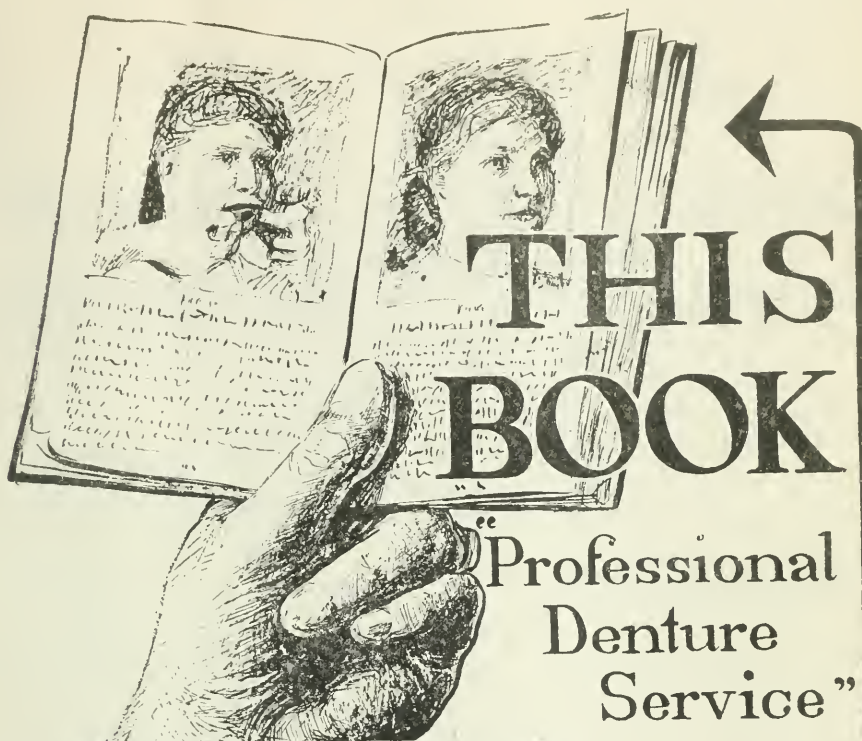
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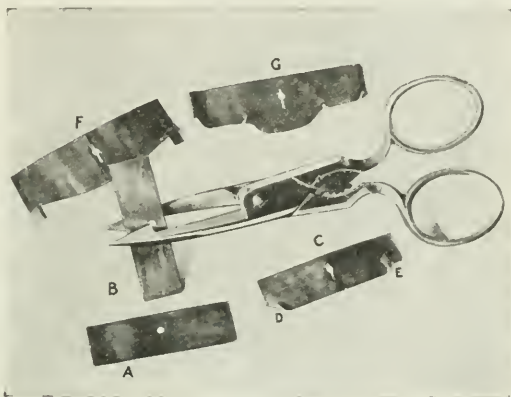
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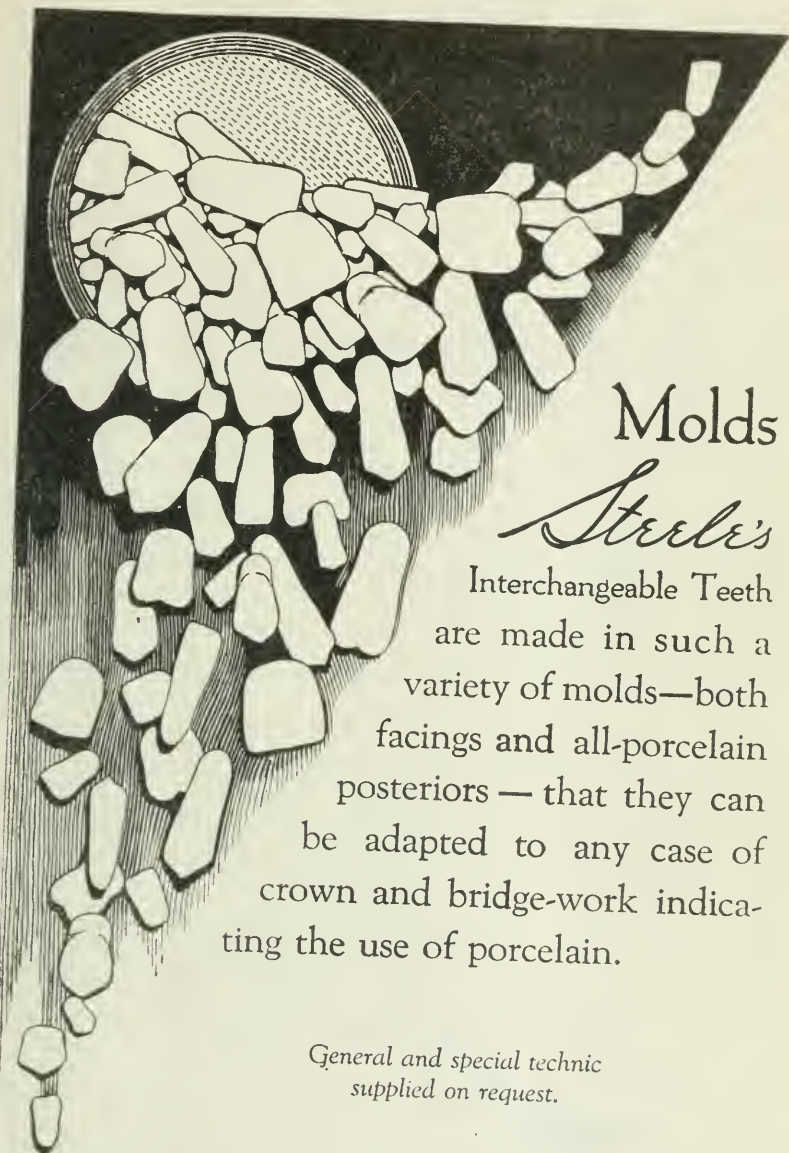
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No. 12.

Original Communications

THE NECESSITY FOR EARLY DIAGNOSIS FOR PERIODONTAL DISEASES

A. J. McDONAGH, L.D.S., D.D.S., Toronto.

Read before the Canadian Dental Association, Chicago, August, 1918.

Gentlemen,—May I express my appreciation of the honor conferred on me by being asked to present this paper before you, and also to say that whoever was responsible for appointing the subject to me, could not have chosen one upon which I would more gladly speak, notwithstanding the fact that I feel hopelessly incapable of handling the subject as it should be handled. I will try, however, to be as short and as concise as possible.

One might ask just here, What is the necessity for early diagnosis in any disease? And naturally we would answer, to minimize, or if possible to eliminate, the baneful effects of that disease, and there is no difference in this respect between a periodontal disease and a disease in any other part of the body.

However, there are some peculiarities which are of very great interest to us. We must consider the periodontal destruction in its relation to constitutional disorders and its local effects and manifestations.

There are two phases of its relationship to constitutional disorders; that is, as a result of constitutional disturbances and as a causative factor in constitutional disturbances.

When periodontal destruction is the result of constitutional disorders it may be, and sometimes is, a very valuable diagnostic entity.

Years ago many observers reported cases where definite indications of constitutional diseases were made manifest at the gingival margin; in fact, we read in Burchard's that Dr. Rhein found, after repeated examinations of hospital patients,

that "Marginal gingivitis was an accompaniment of typhoid fever, tuberculosis, malarial disorders, acute rheumatism, pleurisy, periocarditis and syphilis among the acute diseases. Of chronic nutritional diseases, it was commonly observed in cases of gout, diabetes, chronic rheumatism, several forms of nephritis, scurvy, chlorosis, anæmia, leukæmia and pregnancy.

It is also well known that bismuth poisoning, lead poisoning and many other general poisons very early display themselves by the appearance of the gum margin. I take it that it is not necessary for me to elaborate extensively this phase of the subject. It seems a self-evident fact that in these cases, at least, in order to be of any use to the attending physician the earlier these periodontal diseases are observed the better all around.

Regarding constitutional diseases, the result of periodontal destruction, there are many phases of this particular part of the subject, and I have stated publicly before, and I repeat it



Slide No. 1.

at the present time, that it is unwise to assert, and it cannot be proven, that all gingivitis and all periodontal destruction result in constitutional disorders, but that there are instances where the constitution has been ruined by the absorption of poisons at the gingival margin, very few professional men, either dentists or physicians, will at present attempt to gain-say. I have had in my own practice instances where the gum margin was scarcely inflamed at all; just the slightest irritation apparent; and yet, as a result the patient has suffered inordinately.

I remember a case reported by Dr. Webster. A lady came to him with a slight gingivitis; she suffered so severely from neuralgia that it was undermining her health. After he cleaned up the mouth the neuralgia entirely disappeared and the constitutional disturbances which accompanied the neuralgia

Teachers' convention was held there. This section shown by Dr. Hartsell was very similar to the one made by Dr. Harold Box, of Toronto, a slide of which I am showing you here. No more gingivitis shown than we have in this one, simply a gingival irritation from the result of some local irritant, which one would think scarcely could do harm; yet Dr. Hartsell showed us, and you see here that the blood vessels in the gingival space were quite open where the mucous membrane is broken. (2 and 3.)

As it was expressed at the time by some one present the surface in the gingival crevice was "raw," and we know that surface must have been covered by a fluid containing micro-organisms. That being true, is it necessary for me to ask or to answer the question, What is the use in these cases of early diagnosis?

Let us go on a little further. If we do not discover the disease until it has existed for some time, what is the result? We have seen that the lining surface of the gingival crevice is sometimes destroyed, not always, but often enough to make a dentist feel that he is not performing his duty to the public; that he is not preserving the health of his patients; in other words, that he is not true to his trust if by his neglect and his lack of observation he does not recognize the fact that a process is going on in the mouths of his patients which may be, and in the cities probably will be injurious to the health of the individual. But taking it for granted that this initial gingivitis has no injurious influence on the health of the patients, take it for granted that the mucous membrane in the gingival crevice holds intact, what is the harm of not discovering periodontal destruction in its early stages? That is answered by the slides of Drs. Hopewell-Smith, Hartsell, Arthur Black, and many others.

When we have gingivitis connected with a local irritant, and by that I mean in contra-distinction to gingivitis resulting from such poison as iodine, or bismuth, etc., there is a solution of the continuity of the lining of the gingival crevice at the base of that crevice. Great numbers of plasm cells, and later on leucocytes, or perhaps both together, congregate to take part in the defence, and the surrounding bone is dissolved away. After this process has been going on for some time, and in some cases not a very long time, quite an amount of the investing tissues of the tooth is destroyed, and destroyed never to be built up again to its former contour. But this is not all—although this is bad enough. If we look at the slide

of Hopewell-Smith's we will see that even from a small amount of injury at the gingival margin, far down in the bone, and in the pericementum, unbelievable, unless shown by a slide, the tissues are highly disturbed and abnormal conditions are established. (5.)

Very interesting in reference to this subject is the statement made by Hopewell-Smith, that from his observations the crest of the alveolar process commences to break down immediately nature has finished building it. I have seen some of his slides, and they certainly go to prove that fact. Is it not possible, however, that an irritant in the gingival crevice might be responsible for this breaking down, in at least a great many cases? We know from experience that a great many individuals have gingival irritation, and very little is thought of it, and Hopewell-Smith does not say when speaking of these slides, whether he had examined carefully to see if there was gingival irritation or not. He has found, as many other investigators have found, that micro-organisms make a place of habitation of the gingival crevice, and if we recognize that as a fact, it is quite possible to put those tissues in such a good hygienic condition, and such a state of health that before any great amount of destruction has taken place the irritation will be eliminated.

At a meeting of the Toronto Dental Society last winter Dr. Arthur Black showed a slide which demonstrated the fact that from a pocket formed in the gingival portion of the periodontal tissues infection had travelled in the lymphatics toward the apical part of the tooth, extending perhaps half of the way between the gingival crevice and the apex, showing that the infection in this particular case was travelling, or being carried much further than the pocket would indicate, demonstrating also the fact that the farther the infection was permitted to travel the more difficult it was to reach it or effect a cure. I am showing here a slide (6) which may easily be taken to represent this condition. The pocket in this case is quite small, but the irritation (and this is not uncommon) to the teeth and the surrounding tissues was so great that the patient wanted to have the teeth extracted. After treating the teeth; that is, after curretting the pocket which is here shown, he would have relief for a short time, but the same old trouble would return in a few days. After making this X-ray I discovered that the infection was much deeper than the pocket would indicate, consequently I discovered the reason of the failure to permanently relieve him. Now, if this pocket

had been discovered early enough, if prophylactic measures had been used, in all probability we could have prevented the more serious manifestations.

Let us look at it from another standpoint. While the disease is confined to the gingival portion of the gum, where there is a free blood circulation in the soft tissue, and where there is a chance of the pocket being covered by mucous membrane, or protected to a certain extent by fibrous tissue, we are not so apt to have an infection of the underlying tissues; but let



Slides 6, 7, 8, 9.

that destruction extend into the bone, where you have an exposed bony surface, an unprotected absorbing cavity, and you know by experience the results.

Take a case like this slide (7); note the extent of the unprotected bone; or take a case like this one (8), where the bone is being absorbed out, in every interproximal space, and compare those with the conditions which we find when these diseases just started, such as this slide (9), and it is not neces-

sary to ask of what use would it be to discover these periodontal diseases in their early stages.

There is one particular phase of periodontoclasia which has been brought to the notice of the profession in the most gratifying manner by Dr. Paul Stillman; that is the effect of traumatic occlusion on the periodontal tissues. Traumatic occlusion and all forms of malocclusion have a very potent and baneful influence on the investing tissues of the teeth, and that influence is demonstrated early in the gingival tissues. Malocclusions when not rectified will undoubtedly result in the loss or reduction to uselessness of numberless teeth. But malocclusion can be rectified some times by a periodontist with very little trouble. Often, however, these cases are better taken care of by an orthodontist. And speaking from the standpoint of the periodontal tissues, the sooner the malocclusion is rectified the greater the chance of success of our treatments. Sometimes the periodontist in looking over a case will say that it is impossible because of the age of the patient to change the occlusion so that it may be made normal, and this I have found often to be true, and as a consequence no amount of treating of the periodontal tissues can save them. The teeth become loosened, sore, and have to be extracted, but had a dentist recognized that condition early enough, or had the patient been properly instructed when young, or properly taken care of, normal occlusion established, there would not have been that factor in causing destruction, and disaster would have been averted.

On the other hand, traumatic occlusion is likely to appear later in life, as the cusps of the teeth become unevenly worn and the stress of mastication and occlusion unevenly distributed. In each case the gingival tissues will show a deepening of color and other diagnostic indications which warn the periodontist or the observant dentist that some deleterious process is progressing here. At this stage it is a comparatively easy matter to arrange the occlusion so that it will be practically normal. The investing tissues will be relieved of their unnatural burden and stress, and sometimes without any further treatment normal conditions will be established. Allow this abnormal condition to proceed, however, and the extraordinary irritation or over-stimulation of the tissues will cause their breaking down and the disease to progress.

Partial dentures which have clasps encircling teeth to hold them in place, often are the cause of the loss of teeth, and the

next two slides are eloquent in telling us the results of ill-fitting clasps. Slide No. 10 shows the alveolar bone in position, not broken down, the alveolar crest of periodontal fibres in place, and the tissues normal. Slide No. 11 shows the crest of bone after an irritation from a clasp, the irritation being of short duration, and you will perceive that the bone has disappeared and some of the fibres also. You can see the line showing where the bone originally was.

These slides were shown by Dr. W. E. Cummer at New York, where he read a paper which was afterwards published in the "Allied Journal" of September, 1916. I believe these specimens were prepared by Dr. Harold Box.

Now we have spoken of a number of different phases of the disease which present themselves to us and made a study of



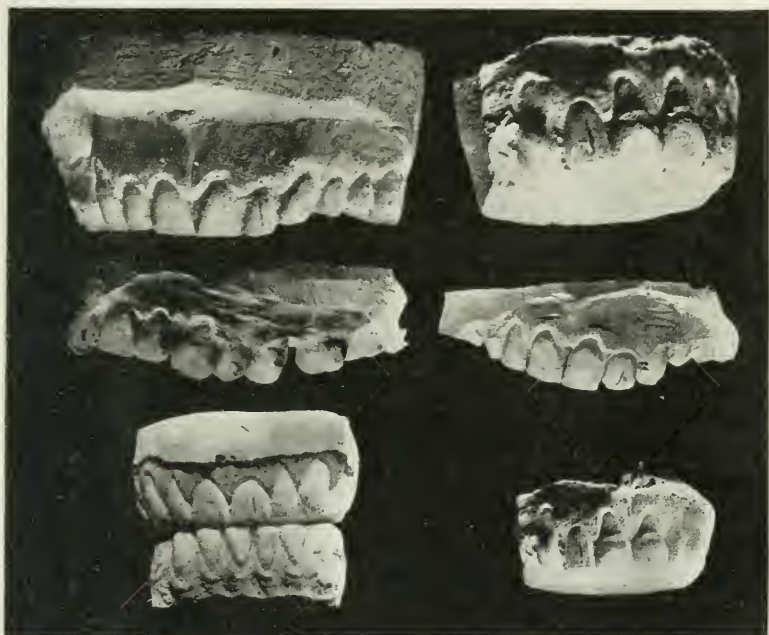
Slides 10, 11.

their beginning, but do we realize how very nearly universal in this civilized age indications of abnormality in the gingival tissues exist, even in the very young. A slight gingivitis is almost universal, and is overlooked, unfortunately, by a great majority of our profession.

It is either not observed or not considered serious. It reminds one of a doctrine that used to be preached at one time regarding caries, in that a cavity, unless it was a good size, was not large enough to fill. Time and experience soon showed the profession—at least those who desired to see—that this was a wrong doctrine; that any form of caries was a menace to the teeth, and the sooner decayed tissue was removed and replaced by something that did not decay the more benefit accrued to the patient. The case of the gingival tissues is no different. It is absolute folly to allow gingival irritation to proceed till you have a deep infection of the bone;

worse than folly to allow the disease to proceed until it is impossible to make a cure.

How much easier it is to treat initial gingival irritation than treat the condition which obtains after torsion has taken place and the teeth twisted in their sockets. If the gingival crevice were curretted and thoroughly sterilized before there was any serious periodontal destruction, I believe that at least ninety per cent. of all periodontoclasia would be prevented, and this is not a mere conjecture. We have all seen in our profession numbers of cases that go to prove this fact, but it is pretty hard for us to prove it to others' satisfaction. The skeptic is apt to say: "There would not have been any



Slides 12, 13, 14, 15, 16, 17.

disease there in any case, and the work of prophylaxis was unnecessarily done."

I have with me a number of models, and we have here the slides made from those models, which I think you will agree with me go a long way towards proving the contention we make in this regard. Some dentists; in fact, practically all dentists at the present time, when putting on porcelain crowns—or a gold crown for that matter—thoroughly currett and sterilize the gingival crevice; not only that, they reduce the periphery of the root in a great many cases, and I will show

you slides here of crowns put on when the roots were treated in this way, which have evidently been the factor in preventing recession of the gum or destruction of the periodontal tissues. I have seen a number of cases where the teeth which were crowned were the only solid teeth in the mouth; but this, of course, you cannot show in a model, but you can show, and these models do show, that the teeth which were crowned in these cases are the only teeth in the mouth about which recession has not taken place. For instance, in slide No. 12.

(12)—Patient 30 years old; upper right lateral crowned at the age of 23; gums on all the other teeth have receded, but there is no abrasion of teeth.

(13)—Patient 48 years old; crown on upper left lateral about fifteen years, or when patient was about 30 years of age. In all probability the gums had receded a little at that time; since then no recession on the crowned tooth, but the gums have receded on all the other teeth in the mouth. Also marked abrasion.

(14)—Patient 38 years old; gold telescope crown on the upper right first bicuspid for fourteen years, leaving patient 24 years of age when the crown was put on. Gums receded on all the other teeth in the mouth; also slight abrasion.

(15)—Patient 35 years old; upper right lateral no band crown; has been on twelve years; put on when patient was 23 years old. Gums receded on all the other teeth but that one. No abrasion.

(16)—Patient 20 years old; right upper central is a banded crown; put on at the age of 15 years; recession taking place on all the other teeth in the mouth, upper and lower.

Now, I do not claim that crowning is always good practice; on the contrary, in my radiographic work, where I have taken thousands of X-rays of crowns, I must say that it is appalling the number of septic areas which we find at the apex of the roots of the crowned teeth. These slides which I have shown you are of teeth which were crowned properly, the roots filled properly, and taken because they were the kind of crowns which we want to demonstrate, but the gums will not recede about the roots of a tooth which is properly treated at the gingival margin, no matter whether the apex is septic or not.

This fact, I believe, is the most powerful argument I have to prove that all periodontal tissues should be closely examined, and at the first sign of abnormality, be it the slightest, should be taken care of by the most careful, conscientious and skilful operator.

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BY A FORMER CANADIAN**

DR. DONALD MACKAY GALLIE, Chicago, Ill.

It affords me much pleasure to be the guest of the Missouri State Dental Association. During your fifty-three years of existence you have accomplished a wonderful work in behalf of dentistry. It is only necessary to recall the progress that has been made through the efforts of such men as Peebles, McKellops, Clark, Homer Judd, Eames and others, that great battalion in the little army of dentists in those early days: men skilled in their profession, whose work placed Missouri dentistry upon the map. They have left you a heritage which I believe you scarcely appreciate. There was no State in the Union that had a more brilliant galaxy of stars in the dental profession. Those men had vision. They saw the future of dentistry and were loyal to their calling. I wish we had more men of that caliber in the profession to-day. We have too many who are inclined to make excuses and apologies for the profession, as to what we have done, and what we are doing. We have no reason to make apologies or excuses, if we glance back three-quarters of a century to the time when dentistry was really made a profession, then consider its growth. I assure you we have a record that is surpassed by no profession in the world to-day. Just think, it was only in 1840 that the first dental college was organized, and the first dental journal and the first dental society were created. Think of what we have to-day—fifty-four dental colleges, most of them very creditable institutions, and now we have a dental journal that goes to a larger percentage of the members of our profession than the accredited organ of any other body. The National Dental Association has gathered in a larger proportion of members of our profession than any other organization whether of commerce, finance or the trades. We have about 45,000 dentists in the United States, and I am proud to say that we have 24,000 members in the National Dental Association. The journal of our organization reaches dentists in the smallest towns and districts. So you can see what a tremendous influence this organization has.

It is true that from 1840 until a few years ago there was a tendency, from the very nature of our profession, to emphasize

the line of reparative rather than preventive dentistry until we were brought up with a sudden jolt by Hunter's Indictment. This forced us to realize that we were neglecting the fundamentals, neglecting science, and giving too much time to repair of damaged tissue and tooth structure instead of the work of prevention. We accepted that reprimand and immediately looked around for ways and means by which we could improve. We did not enjoy the advantages of our medical brothers, for we had no internships, we have no post-graduate schools, no great institutions, like the Rockefeller and Carnegie, to work out our problems. State societies, singly and in groups, started post-graduate courses. Study clubs sprang up in nearly every city and district, and by the splendid contributions of societies and individuals we have well under way a scientific institution in Cleveland of which we may well be proud. The literature of the profession has made wonderful advancement in the past few years. No profession has made fewer mistakes than we have. We need not be downcast, because we are not succeeding in filling every root to the apex; we need not feel chagrined because we leave here and there some derelict in the jaw; don't be stampeded and alarmed by the radical demands of some of our medical brothers. There have, of course, been some radical alarmists in the past three years. Remember, they have made mistakes, and don't be scared by what is shown in the radiograph. You know they do not always portray the real conditions. Do not mistake me. I place a high value upon the use of the X-ray in the practice of dentistry. I could not get along without it, but I want to tell you it is the most discredited evidence in court to-day. It is conclusively demonstrated that lawyers can have a picture taken which is so distorted that it can be made to represent either side they want to have represented, so it is not always safe to follow it.

Again, I want to warn the society not to be carried off its feet by the extremists in the profession who tell us of the terrible things we are doing, and what we have to account for. Do the best you can. Be honest with yourselves and with your patients. Read the best literature; attend State societies, and your tri-State and national meetings, and when you have gathered in all that can be gained of the best practices, you know you are in a position to do the best that you are capable of, and you can stand pat. Be loyal to the

profession, because you have no reason to make apologies; you have reason to be proud of it.

To-day we find we have greater responsibilities than ever. More is expected of the dentists of to-day than ever. When the history of this great war is written, I believe one of the great achievements of the war will be the work of dentists in reclaiming and remaking the victims of the battlefields of these last three years.

In 1914, when this war broke out, it had not progressed one week before they realized the great necessity of dental service. The very nature of trench warfare resulting, as it has in so many head wounds, called for the services of skilful dentists. All of you are familiar with the wonderful work of Hayes, Davenport and that coterie of American dentists in Europe and the great work of the British and French dentists, although there were not enough of them. You know when the cry came: "We must have more dentists," our brothers from Canada, one hundred and eighty-five strong, went across in one body. Really the Canadian Association, more than any other, is responsible for showing to the world that this war could not go on without the aid of the dental profession. I know something about the records those men made. A dental friend from Toronto left with the first contingent, and in that land of pestilence and treachery, Saloniki, he lived for two years and only recently returned invalided. He told me of the work of the Canadian dentists in that land where the conditions were so conducive to deplorable oral conditions, and as to the manner in which they were treated. I have kept in touch with the British and Canadian journals regarding the work done by these men in every part of the world. We must never forget the devotion and sacrifices of these men. In a report made by a leading British general to the War Department and the Medical Department, he stated that no class of men in the service were entitled to greater credit than the Canadian Dental Corps. Our men, since they entered the service, have continued this great work. You know how we worked with Congress with reference to the need of dentists in the army and navy, and only succeeded in securing a very few appointments. But since the United States entered the war, and knowing by reports the great need of dental services with our forces, an S.O.S. was sent out to dentists to join the army. There was a hurried gathering of a few prominent members of our profession at Washington, and ways and means started to get men to take up this great work.

It was doubtful at first whether a sufficient number would respond. When the call was made, men over thirty-one did not respond. It was the young man who had been out of college a few years. You now hear some criticism of too many young fellows receiving commissions. This criticism is not just. I want to assure you that the great majority of the men who have received their commissions are high-class young men, and are doing wonderfully efficient work. Some members of the corps have made great sacrifices. One man in particular, W. H. G. Logan, of whom I wish to speak, is known to a great many of you. I would not mention his name or bring up this subject, were it not for the fact that it is necessary for us to stand back of him; because there is the most damnable and contemptible agitation started to discredit the dental corps and the dental profession generally, simply to get back at this man, notwithstanding the great work he has done and the great success that has already been achieved.

He was one of a number of dentists who were called to Washington by the National Council of Defence. In the discussions on the question of dentists in the army, his knowledge of the conditions and resources of our profession led to his appointment as one of the two dentists on the Medical Board. His chairman and associate was Dr. Edward C. Kirk. Closely following these appointments, Dr. Kirk gave up his work in the Dental Department of the University of Pennsylvania and became a prominent official in the S. S. White Dental Manufacturing Company, and he resigned as a member of the Dental Committee of the Medical Board of the National Council of Defence, and Dr. W. H. G. Logan, of Chicago, succeeded him. Dr. Logan possesses every qualification for this work. He is an excellent teacher, has few peers as an oral surgeon and pathologist, and has no equal in organizing and executive ability. He was ordered to take his place in the Surgeon-General's office and organize the dental profession for war service. For three months he worked as a civilian. As oral surgeon in Base Hospital Unit No. II., he had the rank of captain before going to the Capital. It soon became evident that his usefulness in Washington could be increased by accepting rank, and by order of his superior officers he was made a major. He received this rank because he had the M.D. degree, as you know the D.D.S. degree at that time did not admit of rank beyond first lieutenant. Only a few days ago Surgeon-General Gorgas, in an earnest plea before Congress for higher rank for medical and dental men, made the state-

ment that a man's usefulness in the Medical Department was increased in ratio to his rank. Dr. Logan, of course, accepted the rank of major. What else could he do? And so well has he filled the office that only a few days ago he was promoted to the rank of lieutenant-colonel. (Applause.)

As soon as he received higher rank, there was spread throughout this country the most contemptible and damnable propaganda imaginable. I know that men in this audience have received letters asking them to write to Washington and requesting them to get their friends to write also, to discredit Logan and demand that the Surgeon-General's Department should have a man representing the dental profession who had a rank available to a dentist, which was at that time lieutenant. No attention was paid by the department, because the services of Dr. Logan were appreciated. I know that Col. Logan would not approve of my frank speech here. It has not been prompted by him, neither has he complained to me of these things; I had to get my information elsewhere, and I feel compelled to make the statement because I know what I am talking about, and believe that the profession generally should know the facts.

In furtherance of this propaganda, one of the first things done was the flooding of Washington and the country generally with requests to send in protests to Congress and the Medical Department against the Preparedness League of American Dentists, because it was said it was the political creature of Logan. Logan had nothing to do with the creation of the Preparedness League. It was organized before Logan ever went to Washington, and he had nothing to do with it. And let me say we should all be proud of the league. Then other scandalous protests were sent in, but the climax was reached when a prominent dental manufacturer, backed up by a few disgruntled members of the dental profession who were looking for office and promotion, inaugurated another attack and sent it broadcast throughout this country, requesting members to write to Washington and introduce resolutions at every State society, and at every gathering of dentists throughout the country, protesting against the retention of Lieutenant-Colonel Logan as the head of the Dental Corps.

The men responsible for this dirty work are known in Washington, and they are warned that if this thing continues they will go down to everlasting disgrace.

I attended the dedication of the Dental Department of the University of Iowa some time since, and one of the first things

I heard from a prominent member of the profession there was that the Dental Corps at the camps were a disgrace to the profession. I made it my business that day to interview fourteen of our boys from Camp Dodge—two of them majors and two captains—and they were unanimous in saying that no department to-day in their camp was better conducted and doing better work than the Dental Corps. I have been to the camp at Rockford, and the thirty-five officers they have there are as fine a lot of young men and operators as you will find in any section of the country.

Last Saturday, in Chicago, we had a report from men who had come from different sections of the country, to a conference of the officers of the National Dental Association. These reports related to the work at the different camps. Dr. Hinman, of Atlanta, Georgia, had stopped off at Camp Greenleaf, and there, you know, they have a great military dental school, with 170 men in attendance, eighty-five going in and eighty-five going out each month; it is a sort of clearing house for the members of the corps, and they are going to find out soon who the weak ones are. Dr. Hinman was very enthusiastic over what he had seen there. You have perhaps seen in the papers that in the Medical Reserve Corps there have been sixteen hundred men sent home for one reason or another—some for physical defects and some for professional disabilities. So, when you see occasionally a report of one of our dental boys being sent home, you need not feel that it is a disgrace to the profession—it only means that he is not quite fit for that strenuous line of work.

There is a great deal being said about the number of men that will eventually compose the Dental Corps. I think I can safely state that instead of having one man to one thousand in the army, they hope to have one to each seven hundred and fifty, so that when the soldiers go abroad, there will be 31 dentists provided for each division of 27,000. In a short time inspectors with the rank of major will visit the various camps. They will be selected from the best dentists in the country, and these men will make reports to the Surgeon-General's office. Some of our best men will be appointed for service at the Divisional Headquarters, so that the officers of the army will have service of the highest class. You can see the progress we have made. You can appreciate the standing we have obtained and the esteem and confidence we have secured with the officials at Washington.

What I ask of you is to STAND PAT. Be loyal to the

men representing us in the army. You know what is expected of them. They will be subjected to so many hardships. It is true some of our boys will not be on the firing line; it may be some of them will be stationed in billets far back; some will be in the base and evacuation hospitals, but many of them will be subjected to all the dangers and hazards that confront the men on the battle front.

When I think of them I am always reminded of an incident that occurred when the war broke out. Mrs. Gallie and I were visiting in Winnipeg. Troops were leaving for the front every day. This day we were watching a Highland regiment led by a pipe band. The stalwart Scots swung down the streets looking neither to the left nor right, their kits swinging in rhythm with the pipes. A dear old lady standing next to me must have seen one dear to her, for she cried out, "God bless you, laddie. You may no come back again, but I ken ye'll gie a guid account of yoursel'."

Our boys have left their practices and their homes willing to go to the front in any capacity they may be placed. I know that many of them will not come back, but they will give a good account of themselves. It is up to you and to me to see they are supported in every way. You must STAND PAT, and be loyal to those boys. (Applause.)

But what about us who are around this banquet board to-night? What is our responsibility? Are we to be satisfied by sending these young men to the front? Not by any means. What part are we to play in this terrible convulsion that threatens to overthrow civilization? This is not only a war; it is the culmination of the greatest conspiracy that was ever conceived in the history of the world. It is a conspiracy, starting with the dream, and idea or scheme of one, and it has gone on in its development until it has included the aristocracy, the nobility, the philosophers and teachers, until to-day it has gone through a whole nation, and we now behold a nation obsessed with the idea that they are supermen, and that they are called upon by Divine Providence to rule and regulate the world. How little most of us know about the real cause and reason for this war! We hear it is a contest arising through trade jealousy; that it is a war of Democracy against Autocracy, which is undoubtedly true, for we find lined up on one side nations that believe in freedom, in human liberty and in self-government. These people threw off the shackles of tyranny at Runnymede when King John signed the Magna Charta and Democracy had its birth. On the other side we

find nations allied that stand and fight for just the opposite. This great conspiracy for world domination started with the founder of the present German dynasty, and has gone on gathering strength ever since.

Those of you who have followed the history of this war closely and have gone back to the real causes, can see the development of this idea. How Germany kept grabbing this and that territory and incorporating it into the empire. It is within our memory that this idea of domination was proclaimed by Bismarck, and the great military leader, Von Moltke, who said: "It is going too slowly; we must use force! Might is Right!" You know what they did. They dominated Austria and Hungary. They took from Denmark Schleswig-Holstein: then, about 1870, they picked a quarrel with France, and after France was defeated, they took from her Alsace and Lorraine, together with that great indemnity of billions of dollars, and after France had paid off that great debt in a short time, then Bismarck tried his best to pick another quarrel, and is quoted as saying: "When we go back to France, we will leave her nothing but the eyes of her people for the tears to fall from." They have advanced this conspiracy in the last forty years by establishing a great military scheme, making every man and boy a soldier imbued with this idea of conquest.

A friend of mine residing in Charlottenburg was in a little book store making a purchase, when a German regiment goose-stepped by. He turned to the little spectacled bookseller and said: "Don't you get tired of this? Aren't you sick of paying taxes to keep up this military scheme?" The little fellow swelled up and said: "That is nothing; the tramp of those feet some day will be heard around the world!" That is just what every man, woman and child in Germany believes. The tramp of those feet would be heard around the world. They have inspired every ambassador, every consul, every commercial agent or traveller, every learned man to do everything in their power to bring about chaos and to undermine the strength of those countries to which they were assigned or in which they happened to be. I heard Prof. Schofield, of Harvard University, speak the other night. He was appointed third exchange professor from Harvard with the University of Berlin. He gave a description of the time he was in Berlin and told of the conversations he had with the Kaiser. I believe the first question the Kaiser asked was "When will America find it necessary to adopt conscription

and compel all men of proper age to undergo military service?" He described to Prof. Schofield the invasion of Russia and France exactly as the invasion has been going on the last four years. The Kaiser said: "My country will never be invaded; I will compel peace when the time comes, but it will not be a peace of their making, but it will be a peace that I want, a peace my people will have." He described conditions eleven years ago, exactly as they exist to-day. So, I say, when this great conspiracy was ripe, this war started. It was not the intention to go on to the extent they have. They thought they had things arranged on account of their war machine, and their disregard for treaties, and that the war would be over in three months.

The assassination at Sarajevo was a mere incident. Germany was responsible for the unreasonable demands of Austria-Hungary against Serbia. They knew that Russia would have to make some pretense of going to the rescue of the people of the Balkan States; but the history of the last year shows that, before the war, they had laid the foundation for the collapse of Russia, and they knew, after the war was under way a short time, that Russia would give in. They also knew that, with the entrance of Russia in the war, France, on account of treaty obligations, would have to come in, and it was France they were after. They wanted to go back to France so they could get the remainder of the coal fields and iron mines and forever crush her. This arrangement was beautifully made, but it was made upon the theory that Britain would not go into the war; but when Britain would not allow the rape of Belgium, it upset their calculations, and instead of being a war of three months they could see that it was to be a war of long duration. Then what card did they play? Their next move was to introduce into warfare the most fiendish acts ever conceived—liquid fire, poisonous gas, air raids upon defenceless towns, the submarines destroying the lives and property of non-combatants, the sinking of hospital ships, polluting of the water supply, maiming children and ravishing women, and all that sort of thing. You know this murderous record was doubted by many up to the time our ambassadors, Mr. Gerard and Brand Whitlock, and a few others of our people returned to this country. When these men told us what they had witnessed, we began to get our eyes open.

I was at a dinner some time ago in the city of Chicago with a number of representative men of that city, and on account of

being a countryman of the guest of the occasion, I sat near him. I heard what he had to say at that gathering, and I also was told by him of many things which he dared not speak of at that meeting. That man was Ralph Connor, chaplain of the 43rd Highlanders. He detailed these atrocities. My God! If only you could have heard them! Some of you perhaps have. I shall never forget the description he gave of what he had observed. He was with the Canadian forces when they followed Hindenburg's retreat. He was only three days behind that retreat, and, among other things, he mentioned their entry into a little town; not a spear of grass, not a single thing resembling life was left. Every tree was cut down, every stream polluted, every house wrecked or burned, every horse, cow, sheep and pig had been slaughtered, not a vestige of life, with the exception of one poor woman that came to the threshold of what had evidently been a brick house, with only three walls left standing. This young French woman told them that her husband had been killed four months previously, and that when the Hindenburg army went through they had broken in the door of their house with the butt ends of their rifles and demanded who was there. When she said: "Only my old father and my old mother," and the old man tottered out, over eighty years old, his brains were dashed out by one of those fiends, and his body left lying outside the door of that cottage; then they inquired where her mother was. She could not come out because she was bedridden. They scattered kerosene over the house and burned it down, and that poor bedridden woman was burned in there. This sole survivor had no other place to go; she had been outraged and ravished by the Huns, and was too weak to seek another asylum, and yet you hear people say they do not believe such things occurred! He told about this same Hindenburg army when they had made their advance, and recounted an interview he had had only three days before he left France with the Bishop of "X," one of the grandest men in that section of the country. The bishop had a splendid parish, in which was located a convent and school with a fine corps of teachers. The bishop said: "To-day we have nine living evidences of the lust of the bull-necked brutes who went through here only a few months ago." I heard this story. I know what Ralph Connor said was true. I have heard the story from others. I have heard of these atrocities from some of my own relatives. I have a young nephew, an aviator, who has been on the western front for three years. Last June he was attacked by an enemy

airman while he was giving aid to a companion, and at a height of 14,000 feet was shot clean through the body. He dropped 8,000 feet, recovered and succeeded in landing safely, but was unconscious when lifted out of his machine. He was mentioned in despatches and granted thirty days' leave for heroic conduct. He visited me in Chicago for two days. He told me of the awful conditions and the atrocities over there. So you see these reports are authentic and not exaggerated.

I have heard the story of Ada Ward, little Catharine Burke and Major Strobert. You can hear it from any of them. They have been there, and know all about the horrors. Those awful atrocities are what brought us into this war.

Now the question is, What are we going to do? What is our duty at this time? We have people, and I know there are many of them in Chicago, and also in Missouri, who are not loyal, and I tell you this is the time when we want to find out who is with us or against us. There are only two roads to go: You can only be for or against. You must be either loyal or a traitor, there is no neutral ground, and we want to find out where the people stand to-day. (Applause.)

When anyone says to you that they do not believe there have been such atrocities, or that such things ever happened or that such conditions exist, grab him by the throat and choke the lie out of his contemptible mouth, because he is a traitor, and knows he is lying!

You see in your papers every day the account of this fellow and that one being arrested for some disloyalty, some treasonable act; what do they do with them? Some of their fellow-citizens round up one of those hounds and make him kiss the flag. They like to do that because they spit on it when they kiss it. It is time they should be made to bite the dust instead of kissing the flag. (Applause.) It is time we did away with sending these bull-necked brutes and sneaking spies, those treasonable hounds to watering places and pleasant resorts where they can continue to plot treason. The time has come when they ought to be shot instead of interning them in such places. My God! I would like to see more of them wither and rot, but from mistaken notions of humanity, we are interning them instead of interring them. When we hear a disloyal word, or witness a disloyal act, we ourselves are disloyal if we do not report it. We, as dentists, are in a position to do the greatest good, because of our profession we come in contact with all classes of people. We come in contact with the high and the low; the rich and the poor, and

have a wonderful opportunity on account of our professional standing in our communities. So that more should be expected and done by us than by the ordinary citizen, and especially can we be useful in putting a silencer upon this peace talk, which is sporadically breaking out here and there. Only the other day I had a lady in my office, whose name did not sound as though she was a descendant of Washington, and she was talking about this terrible war, and our talk was becoming rather heated. At last she said: "I am glad my boy is not old enough to go to the war." I said: "Madam, so am I." "What do you mean?" I said: "Because that kind of breed is a liability to the country instead of an asset," and she has left me for good! I tell you it is your duty to crush out this thing in every way you can. There are so many ways in which we can do our bit. There is no class in the world to-day more successful than dentists and less affected by the war. Let that soak in! One thing for us to do to-day is to prepare the boys so that they are fit to go to the front as far as oral conditions are concerned. This, you know, is being brought about by the Preparedness League of American Dentists. In spite of the protests which were forwarded to Washington, the department received the report of the Red Cross Association requesting or suggesting that the Government give the Preparedness organization financial aid, and they were given \$10,000 to start with. So you can be proud to do your part in this great work. You can be one of the efficient soldiers in this army caring for the mouths of our boys.

I hope every man here in the last month put in an honest income tax return. I learned the other day of a certain doctor in the city of Chicago who is reputed to have one of the finest equipped offices in the city, and who pays \$1,500 a year rental, whose schedule filed with the Revenue Department showed that he was paying the magnificent tax of \$34.69. I reported him. You bet I did! He was falsifying, and cheating the Government, and by that was refusing to do his bit. The time has come for us to contribute to the loan soon to be called for. What are you going to do? No great credit is due us for subscribing one, two, or even five thousand dollars for this loan. It is a good investment. And yet, I have no doubt some hesitate. Our contributions, no matter how liberal, to the Red Cross, Y.M.C.A., K. of C., and all other kindred organizations, are only a mite in this great struggle. Think of the contribution the fathers and mothers are making, and before this terrible war is over the greatest sacrifices must be

made. We men think we have a heavy burden to carry, but it is light compared to that of our women. But, thank God! our women will never suffer like their sisters "over there." Think of the suffering of the women of France, Belgium, Poland, and, worse still, go down to that Asiatic country where the Turk rules, and think of the Armenian women. A few nights ago I heard a noted American divine who recently returned from Turkey describe conditions in Armenia. He told of a terrible massacre that took place in one of the large cities just before he left. Every male, with the exception of a few cripples, was massacred. All the women, old and young, were herded together. All the Turks of military fitness in that section were in the army. Prisoners of all descriptions were liberated and sent to the front. So these women and children were placed in charge of degenerates, who were not fit to go into the Turkish army, and despatched across the desert to Aleppo, a distance of eleven hundred miles. There were in that company eighteen hundred mothers, wives, daughters and sisters when they started on this journey, and when they reached Aleppo there were remaining alive but 154. They were old women and children; a great many died on the way, but the young women were taken from the ranks to a life a thousand times worse than death. This terrible pilgrimage, as well as the massacre, was countenanced by Germany, who is dictating all the atrocities and all the ruthlessness of this terrible conflict.

Recently I have been working for an Armenian student formerly of Roberts College. His family had been wiped out, and he said to me one day: "Dr. Gallie, you Americans do not seem to understand what Armenian atrocities mean. You should remember that our mothers, wives and sisters are just like your mothers, wives and sisters, and yet little has been done by the world at large to prevent this extermination of a splendid race." Now, I ask you to think of the women of France. Their suffering has not been confined to this war period, but ever since 1870 they have lived in fear. They knew that Germany was only waiting the chance to again attack. Across the frontier she could hear by day the pounding of the great trip-hammer, and by night she could hear the roar and see the glare of the blast furnaces preparing instruments of war to subjugate fair France. No mother of France from that time could hold her baby boy to her breast and say: "You will grow up to be a great joy and support to me." No, no, she could only hold him closer to her heart

and say: "You are a son of France. Some day you will have to fight and die that France may live."

Women of America, I know what you are going to do to help relieve the indescribable sufferings of those women over there; you are going to knit, sew, serve, save and sacrifice and pray that we may win this great conflict. You must not become discouraged or disheartened if at times we have reverses; you must not be impatient if the end of the war seems remote. Do not be carried away by every peace propaganda! Nothing is more disastrous than that. Only recently the whole land was flooded with peace talk. The wish was in every heart and the word on every tongue. The result was a tremendous let-up in war material production. A little Scotch friend of mine who has given his services for the past year to the Chicago Red Cross Chapter, and had charge of the packing and shipping in the big warehouse there, told me that the shortage in production during that peace war was appalling. We are all longing for peace, my friends, but the only peace we can allow is a peace of our making. A peace that is possible only after we have beaten to their knees the murderous Prussian bully and his allies.

Few of you can feel as I do to-night, with the great uncertainty of the outcome of the terrible battle now raging. For nearly four years my people have been in this war. My old mother, eighty-seven years old, has seen since 1914 every male relative under forty-two go into the army—five grandsons and a dozen grand-nephews. From one family three sons have been killed. Others have been wounded and made prisoners.

Saturday evening, just two hours before I left Chicago to come to this meeting, my only son, who has been at Fort Sheridan since last August, received orders to proceed to Camp X to join his unit for overseas service, and I had to leave my little wife to bear the brunt of parting with our boy, who left on Sunday. Ere many days your boys will be leaving for the front, and you will feel as I do—proud that you have sons going to fight for such a righteous cause. Think of that army on the west front to-night, holding the line against great odds. Holding it until our reinforcements arrive; holding it because it means the surviving of civilization and liberty and the rights of humanity. While it may look dark to-night, in the end we will be victorious. (Applause.)

Shoulder to shoulder will stand the Briton, Scot, Celt, Gaul, Anzac, Canadian and American, inspired by the Red, White

and Blue of spotless Old Glory, that has never been lowered in defeat; of the Tri-color of heroic France, and the Union Jack, the flag that has braved a thousand years the battle and the breeze. To-night let every lip say a prayer that reinforcements will arrive in time so that these flags shall not be lowered; so that liberty shall not perish! (Applause.)

**PROPOSED SCHEME FOR THE UTILIZATION OF
SOME OF THE EXTRA TIME OFFERED BY
THE EXTENSION OF THE MEDICAL
CURRICULUM FROM FIVE
TO SIX YEARS**

In framing a curriculum for the proposed six years' course in medicine, it is recommended that a certain number of hours in each year be devoted to optional and elective work, for reasons which are hereby respectfully submitted for your consideration. In the first place, it may be well to explain that by an elective hour is meant a scheduled hour during which attendance is obligatory at one of several alternative courses, and by an optional hour, one during which one or more courses are offered, but at which attendance is not obligatory. The time for these courses has been rendered available, partly by the extension of the academic year from 28 to 30 weeks, and partly by a slight reduction in the hours scheduled for the regular courses in certain departments, the instructors of which believe that for the training of the average medical student a slight curtailment of the assignment of time as suggested in the original six-year schedule is advisable, provided opportunity be given in such departments for more advanced instruction to those who may desire it, either because of interest in the subject for its own sake, or because it is advisable as a part of their training for some specialty.

It is clear that the training of the medical graduate who intends devoting his life to general practice should be of a somewhat different scope from that of the specialist. While both groups of graduates must have a certain familiarity with the fundamental medical sciences, and with the principles of the practice of medicine, surgery, obstetrics and the specialties, it is advisable that some part of the six years in the medical school should be available for study, either in preparation for specialization in some chosen branch of medical or sur-

gical science, or if general practice be the goal, in acquiring a broader general education than that which medicine alone can offer, and a more direct acquaintance with the economic, hygienic and sociological principles which govern the general well-being of human communities. It is with these objects in view that the elective and optional hours are proposed.

Since it is unlikely that any considerable number of students, during the earlier years of the medical course, will have decided as to the precise nature of their future life work, and since the entrance requirements are placed at the relatively low standard of the junior matriculation, it is suggested that part of the elective or optional time during the first three years should be made available for attendance at certain of the undergraduate courses offered in the university (English, modern languages, ethics, economics, etc.), election of courses in the fundamental sciences being, however, possible for those students who may have already decided upon some career for which a more thorough training in some science is important. In the later years of the medical curriculum, on the other hand, when the student is more likely to have decided upon a special career, the elective or optional time should be largely arranged to permit him to return for advanced instruction to some one or more of the laboratory courses of the medical school. By such a scheme the student who contemplated specialization, in general surgery, for example, could spend some of the time of his later years of study in the anatomical and histological departments, or if in medicine, in those of biochemistry and physiology, and so on. For those students contemplating general practice, the elective time of the later years of study could be devoted to further attendance in outpatient dispensaries and clinics, to clinical clerkships, to sociological and public health work, and in such other ways as might seem desirable.

The exact group of electives which each student should take would naturally require to be directed by student advisors, appointed by the faculty. The advisor would not influence the student in his choice of a career, but would merely advise him as to how he could most profitably expend his elective time. It may further be pointed out that after subtracting the suggested elective and optional time, there remains for the regular medical courses an assignment which is decidedly above that required by the most representative medical boards. This ensures that if a student after spending some years in preparation for a certain specialty should de-

cide to change to another, or to enter general practice, he would be no less well trained therefor than graduates of other medical schools.

There are certain general reasons for the adoption of a moderate degree of elasticity in the schedule. Some of these are as follows:

1. With the preliminary education required (junior matriculation) the average medical graduate, apart from his training in the preliminary medical sciences, will not be any more educated in the broad sense than the average member of the community in which he practices. This will make it difficult for him to acquire proper influence, and maintain the dignity of his calling, besides narrowing his point of view and his sense of the true value of his profession.

2. The ordinary medical curriculum cannot be framed to give every student courses in such subjects as economy, sociology, ethics, psychology, etc., and yet there can be no doubt that to no other members of a community can a general knowledge of these subjects be of greater practical value than to the general practitioner, whilst on the other hand, for the specialist such courses would be of little practical value in comparison with a more advanced knowledge of the biological, chemical or physical sciences, which are related to his specialty.

3. Most of the better medical schools in the States will soon require, as a preliminary to entrance, at least two years' undergraduate college work, in addition to three years of high school. Unless our Canadian medical graduates come up to about the same standard of general culture, as such an education implies, it will be decidedly detrimental to our standing, and must ultimately, inevitably place us on a lower plane.

4. It is most important for the future of medical science that every possible means be taken to encourage suitable men to become investigators, whether laboratory or clinical. While we must provide for the education of general practitioners who will be in a position to practice in all departments of medical science, we must at the same time make every endeavor to encourage those who may desire to become leaders in some special branch of the profession, by offering the opportunity of more intensive study. It is only in this way that a university medical school can fulfil its full destiny, and can become a real centre of medical education and advancement.

Moreover, it should be remembered that a boy of scientific bent often chooses the medical school, not because he has any decided desire to practice medicine, but because the medical curriculum appears to him, or his advisors, to be the readiest means of meeting his general desires. For these and other reasons it is therefore important that the way should be made easy for such students to follow their inclinations at least to the extent that they may find out by actual trial whether they would be more fitted in practice or in investigative and academic work. It is in connection with this consideration that the advisability of granting some degree in science is to be weighed.

5. The elective system has been adopted in several of the best medical schools in the States (Johns Hopkins, California, Western Reserve) with undoubted success.

A quotation from a letter of Sergt. Thompson's indicates how the C.A.D.C. works overseas:

"We have been working very hard just lately. We held the record of turning out the largest number of plates per week ever since this laboratory started until four weeks ago, when Witley Camp turned out 214 plates, beating us by two. Two weeks after that Seaford beat Witley by turning out 218. By that time we thought it was time to get busy. The captain told us how matters stood, so we started. Although we worked but little overtime, yet we made the new record of 265 plates per week. I did nineteen of them, which kept me busy as nearly all my sets were full cases, or else difficult. So now I think we can go easy for a little while."

ORAL SEPSIS IN ITS RELATIONSHIP TO SYSTEMIC DISEASE

The discovery of a relationship between ill health and defective teeth is by no means recent. It has received casual mention in the older literature and has been independently recognized, perhaps for centuries, by practitioners of medicine and dentistry. The subject has not received the prominence it deserves, however, previous to the past decade. We wish to quote *in toto* an article published by Benjamin Rush, one of the signers of the Declaration of Independence and one of America's noted physicians, on observations commenced by him in 1801. This remarkable article, written before the discovery of bacteria and when our knowledge of pathology was meagre indeed, harmonizes in its essentials with the more popular views of the present day. I have taken the liberty of italicizing several striking sentences.

Medical Inquiries and Observations. By Benjamin Rush, M.D. Professor of the Institute and Practice of Medicine and Clinical Practice in the University of Pennsylvania.

"Sometime in the month of October, 1801, I attended Miss A.C. with rheumatism in her hip joint, which yielded for a while to the several remedies for that disease. In the month of November it returned with great violence, accompanied with a severe toothache. Suspecting the rheumatic affection was excited by the pain in her tooth, which was decayed, I directed it to be extracted. The rheumatism immediately left her hip, and she recovered in a few days. She has continued ever since to be free from it.

"Soon after this I was consulted by Mrs. J. R. who had been affected for several weeks with dyspepsia and toothache. Her tooth, though no mark of decay appeared in it, was drawn by my advice. The next day she was relieved from her distressing stomach complaint, and has continued ever since to enjoy good health. *From the soundness of the external part of the tooth, and the adjoining gum, there was no reason to suspect a discharge of matter from it had produced the disease in her stomach.*

"Some time in the year 1801 I was consulted by the father of a young gentleman in Baltimore, who had been affected with epilepsy. I inquired into the state of his teeth, and was informed that several of them in his upper jaw were decayed. I directed them to be extracted, and advised him after to loose a few ounces of blood, at any time when he felt the

premonitory symptoms of a recurrence. He followed my advice, in consequence of which I had lately the pleasure of hearing from his brother that he was perfectly cured.

"I have been made happy by discovering that I have only added to the observations of the physicians, in pointing out a connection between the extraction of decayed and diseased teeth and the cure of general diseases. Several cases show efficacy of that remedy in relieving headache and vertigo are mentioned by Dr. Darwin. Dr. Gater relates that Mr. Petit, a celebrated French surgeon, had often cured intermitting fevers which had resisted the bark for months, and even years, by this prescription; and he quotes from his works two cases, the one of consumption, the other of vertigo, both of long continuance which were suddenly cured by the extraction of two decayed teeth in the former, and of two supernumerary teeth in the latter case.

"In the second number of a late work, entitled "Bibliothèque Germanique Medico Chirurgicale," published in Paris by Dr. Bluve and Dr. Delareche, there is an account, by Dr. Siebold of a young woman who had been affected for several months with great inflammation, pain and ulcers, in her right upper and lower jaws at the usual time of the appearance of the catamenia, which at that period were always deficient in quality. Upon inspecting the seat of those morbid affections, the doctor discovered several of the molars in both jaws to be decayed. He directed them to be drawn, in consequence of which the woman was relieved of the monthly disease in her mouth, and afterwards had a regular discharge of her catamenia.

"These facts though but little attended to, should not surprise us, when we recollect how often the most distressing general diseases are brought on by very inconsiderable inlets of morbid excitement into the system. A small tumor, concealed in the fleshy part of the leg, has been known to bring on epilepsy. A trifling wound with a splinter or a nail even after it has healed has often produced a fatal tetanus. Worms in the bowels have produced internal dropsy of the brain, and a stone in the kidney has excited the most violent commotions in every part of the system. Many hundred facts of a similar nature are to be met with in the records of medicine.

"When we consider how often the teeth, when decayed, are exposed to irritation from hot or cold drinks and aliments, from pressure by mastication, and from the cold air, and how intimate the connection of the mouth is with the whole system,

I am disposed to believe they are often the unsuspected causes of general, and particularly of nervous diseases. When we add to the list of those diseases the morbid effects of the acrid and putrid matters, which are sometimes discharged from carious teeth or from the ulcers in the gums created by them, also the influence which both have in preventing perfect mastication, and the connection of that animal function with good health, I cannot help thinking that our success in the treatment of all chronic diseases would be very much promoted, by directing our inquiries into the state of the teeth in sick people, and by advising their extraction in every case in which they are decayed. It is not necessary that they should be attended with pain in order to produce diseases, for splints, tumors, and other irritants before mentioned often bring disease and death, when they give no pain, and are unsuspected causes of them. This translation of sensation and motion into parts remote from the place where impressions are made, appears in many instances, and seems to depend on an original law of the animal economy."—Extract from Oral Sepsis by Duke.

TEETH AND TONSILS

A quarter of a century ago the venerable and level-headed Professor of Surgery in the Toronto Medical College impressed on his students three most important points: The value of high elevation, rest, and the examination of the teeth, He was so emphatic about the teeth that he insisted that every patient with bad teeth should have them attended to first. The discovery, since then, that infections of teeth and tonsils cause many systemic diseases, is a tribute to his intuitions, shall we say?

Of course, we must add, as other possible sources of systemic trouble, infection of nasal sinuses, bronchial glands, gall-bladder; but teeth and tonsils stand in the forefront of offenders. So that the wise physician to-day, when called to a case of rheumatism (acute or chronic), sciatica, anemia, goitre, neurasthenia—to mention only a few—ought to investigate carefully for foci of infection in one or the other of the regions referred to above.

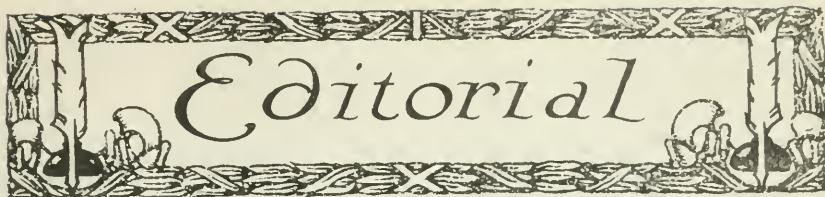
Layman, of Indianapolis (see the February *Laryngoscope*), has ascertained, in so far as diseased tonsils are concerned, in the causation of systemic disease, that tonsillectomy, *when based on rational and well-founded relation of cause and ef-*

fect, and when performed under the most favorable conditions, has given exceedingly satisfactory results. (Italics ours). Crowe, Watkins and Rotholz, of John Hopkins, state that only under very exceptional cases should a patient with rheumatoid arthritis be submitted to a tonsillectomy. King, of New York, administers an autogenous vaccine from cultures taken from the tonsillar crypts until bacterial activity is checked; then enucleates, and, if necessary, continues the vaccine. Such precautions improve the patient's chances of a permanent cure and lessen the probability of an acute post-operative exacerbation.

Crile and Halstead—in cases of goitre due to tonsillar infection—operate on the thyroid first; Bloodgood believes that the tonsil or co-existent infection should be taken care of first. The Mayos do a thyroidectomy to relieve symptoms, and then the tonsillectomy to prevent recurrence of hyperthyroidism in the remaining lobe.

Layman says internes and nurses in recent active service with septic cases should have temporary leave of absence before undergoing tonsillectomy. Arthritic, cardiac, renal and other systemic patients should not be allowed up too soon after operation. Patients showing albuminuria on examinations should be kept in bed on restricted diet for a week or ten days prior to operation.

In view of the amount of discussion on this subject of focal infection we commend Layman's article to our readers.—(*Editorial*) *Canadian Journal of Medicine and Surgery*.



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VOL. XXX. TORONTO, DECEMBER 15, 1918. No. 12.

ARMY DENTAL SURGEONS' PAY

About six months ago the medical profession made representations to the Militia Council concerning the pay of army medical officers. It was pointed out that physicians and surgeons gave a special kind of service to the army which took more years of preparation than an officer of similar rank in other branches of the service. The council must have concurred in this view, because the pay of the army medical officer was increased by a dollar a day, and more for special services. It was generally known at the time that such representations were being made to the council, and many in the dental profession knowing that similar conditions existed in dentistry expected that a similar increase would be made in the department of the C.A.D.C.

No mention of the increase for dentists was made. There is an additional reason for an increase for home services for dentistry as compared with medicine, because all the members of the C.A.D.C. are compelled to confine their services to the army, while many physicians carry on a private practice.

At the meeting of the Canadian Dental Association in August a resolution was passed and a committee formed to go into the matter, with a view of having the regulation in force in the medical service extended to the dental service.

Little seemed to be coming of this action until a few days since, when it was announced that the order had gone through. The professional status was more or less at stake in the matter. There is no doubt but that the O.C. in Division No. 2 had much to do with setting this matter right. The physician, the dentist and the veterinary bring to the army a special training which costs the Government nothing as compared with the combatant officer who is trained by the Government.

Editorial Notes

Dr. W. R. Eamans, after three years service in the Canadian Army Dental Corps, has resumed practise at 20 Sparks St., Ottawa.



Dr. C. J. Reid, Edmonton, died of the "Flu" Nov. 9, 1918. He was a graduate of the Chicago College of Dental Surgery, and practised in Edmonton for almost twenty years.



The Oral Hygiene Committee of the Ontario Dental Society had an interview with the Hon. Dr. Cody concerning the inspection and care of the mouths of the children of the rural public schools. It would look as if some tangible scheme could be arrived at.



Dr. G. W. Payne, of Vermillion, Alta., died of the "Flu" Nov. 11th, 1918. He was a graduate of Chicago College of Dental Surgery and had practised in Vermillion seven years, and leaves a widow and two children. The body was interred at Tilsonburg, Ontario.



In this issue appears an address by Don. M. Gallie, Chicago, delivered April 1st, 1918, just at the time when the Germans were forcing the Allies back on the Western front. It was just such addresses as these that stiffened the backs of our cousins across the line. The Gallie family has a history of vigor and loyalty in Canada.

Correspondence

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO

Office of the Secretary, 96 College St.,
Toronto, Nov. 20th, 1918.

Dear Sir,

In the matter of the election of a Board of Directors of the Royal College of Dental Surgeons of Ontario, nominations were called for by a circular letter dated October, 1st, 1918.

In Electoral Districts Nos. 1, 2, 4, 5 and 7, the election has been by acclamation, only one candidate having been nominated in each District. No. 1—Major W. R. Green, Ottawa. No. 2—Dr. M. A. Morrison, Peterboro. No. 4—Dr. R. H. Cowen, Hamilton. No. 5—Dr. W. M. McGuire, Simcoe. No. 7—Dr. H. R. Abbott, London.

In Electoral District No. 3, two candidates having been duly nominated, namely Dr. Chas. Colter, of Toronto, and Dr. R. Gordon McLean, of Toronto, a ballot will be necessary.

In Electoral District No. 6, two candidates having been duly nominated, namely, Dr. E. E. Bruce, of Kincardine, and Dr. C. E. Bean, of Chesley, a ballot will be necessary.

As required by Section 9 of By-Law 27, I am now sending to each member of the Royal College of Dental Surgeons of Ontario, residing in Electoral Districts Nos. 3 and 6, who has been certified to me, by the Treasurer of the said College, "as not being in arrears, on the 2nd day of November, 1918, in respect of any fees payable under the provisions of the Dentistry Act.";

- (a) The name and address of each candidate duly nominated, see above.
- (b) A blank voting paper in the form prescribed by the Dentistry Act.
- (c) An envelope addressed to myself and marked "voting paper, Royal College of Dental Surgeons of Ontario."

Members of the College who intend to vote at this election will kindly note, that a voting paper to be counted at this election, must:

- (a) Be duly executed by a qualified elector on enclosed form.
- (b) Be enclosed, and sealed, in the accompanying envelope, or in one similarly marked on the outside.

- (c) Be delivered to the Secretary, W. E. Willmott, 96 College Street, Toronto, or if sent by mail, by registered letter, so as to be delivered to him, in either case, not earlier than the 20th day of November, nor later than Wednesday, December 11th, 1918.

Only qualified electors who reside in District Nos. 3 and 6 may vote for candidates in those Districts.

Voting papers will be received for the candidates named above as in nomination for Districts Nos. 3 and 6 and for no others.

Candidates will take notice that the voting papers will be counted in the Board Room of the College, 240 College Street, Toronto, by the Scrutineers appointed under the By-Law, James Brebner, Esq., Registrar, Toronto University, and H. Bolicho, Esq., Fee Clerk, Toronto University, or in their absence by other duly authorized Scrutineers, on the 12th day of December, 1918, commencing at two o'clock in the afternoon.

Every candidate, or his agent accredited in writing, is entitled to be present.

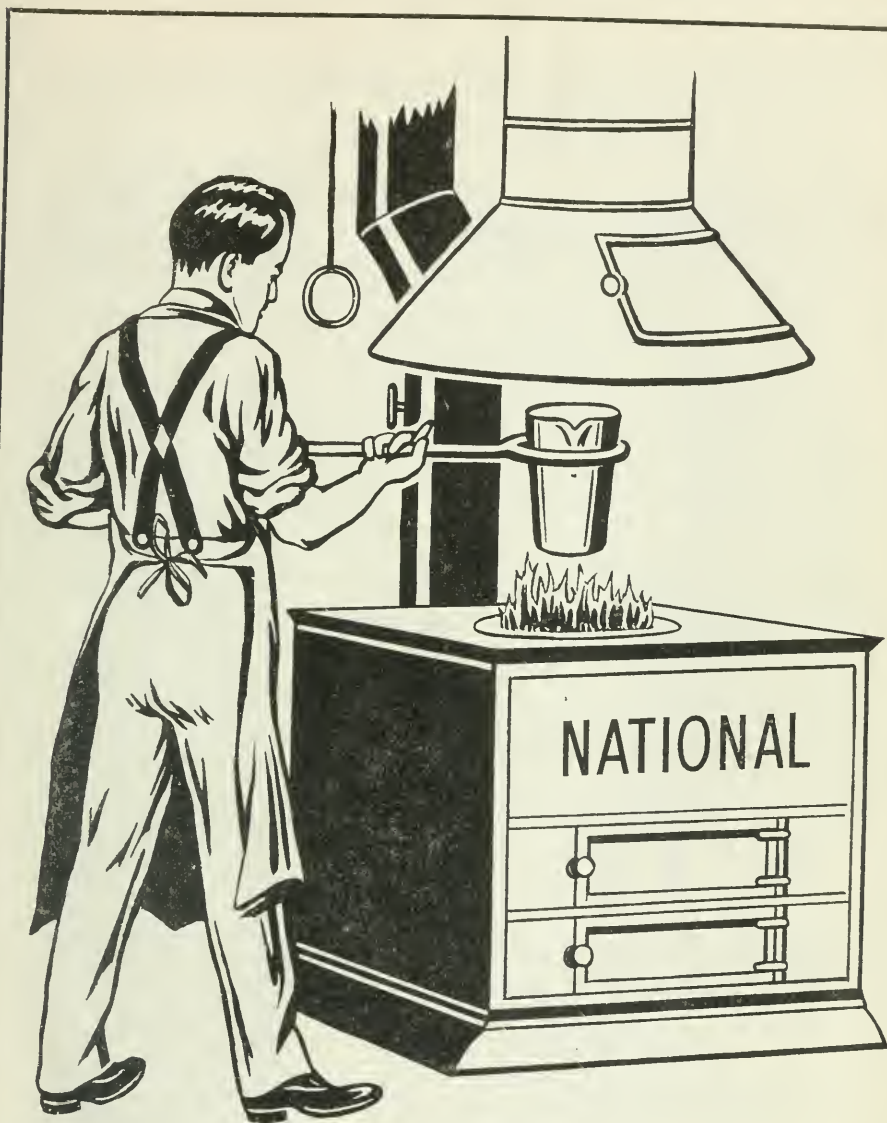
Yours very respectfully,
W. E. WILMOTT,
Secretary R.C.D.S., Ont.

Review

Oral Diseases and Malformation. By G. V. I. Brown, Milwaukee. Publishers, Lee & Febiger, Philadelphia and New York.

This valuable work has reached its third edition. It has been a standard for many years in dental schools and among general practitioners. The most notable improvement in this edition is the chapter on war surgery and the references to war prosthesis.

It is strange how some dentists get along without a good reference library. The only means they have for getting help with new cases coming into their practices is from some friend. There are fewer books on oral surgery and oral pathology among the dental practitioners in Canada than of any other useful dental book. Such a work as this one, with its five hundred illustrations and its seven hundred pages of text, should be in constant use in a general dental practice.



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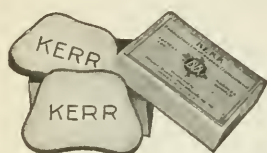
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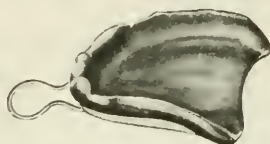
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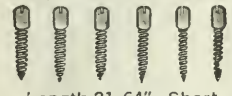
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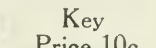
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M. WHILLDIN FOSTER, M.D., D.D.S., Emeritus Professor of Therapeutics and Pathology.
WM. B. FINNEY, D.D.S., Professor of Prosthetic Dentistry and Metallurgy.
B. HOLLY SMITH, M.D., D.D.S., President of Faculty and Professor of Dental Surgery and Operative Dentistry.
WILLIAM SIMON, Ph.D., M.D., Professor of Chemistry.
GEO. E. HARDY, M.D., D.D.S., Professor of Physiology.
W. G. FOSTER, D.D.S., Professor of Therapeutics and Pathology.
J. W. CHAMBERS, M.D., Professor of Anatomy.
S. J. FORT, M.D., Professor of Materia Medica.
A. C. HARRISON, M.D., Clinical Professor of Oral Surgery.
T. S. WATERS, D.D.S., Professor of Clinical Dentistry.
C. M. GINGRICH, D.D.S., Professor of Clinical Dentistry.
E. HOFFMEISTER, Ph.D., D.D.S., Professor of Materia Medica and Demonstrator of Chemistry.
STANDISH McCLEARY, M.D., Professor of Anatomy.
CLARENCE J. GRIEVES, D.D.S., Professor of Comparative Anatomy and Dental Histology.
KASSON C. GIBSON, N.Y., Professor Oral Deformities and Fractured Maxillaries.

Lecturers.

HARRY E. KELSEY, D.D.S., Orthodontia.
B. HOLLY SMITH, Jr., A.B., D.D.S., Dental Ceramics.
W. W. PARKER, LL.B., Dental Jurisprudence.
L. D. CORELL, D.D.S., Asso. A.I.E.E., Dental Radiography.
B. L. BRUN, Operative Technique.
D. R. KENNEDY, D.D.S., Crown and Bridge Work.

Clinical Instructors.

T. S. WATERS, D.D.S., Chief Clinical Instructor, Resident, Md.

Corydon Palmer, D.D.S.Ohio	J. Emory Scott, D.D.S.Md.
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Demonstrators.

B. HOLLY SMITH, M.D., D.D.S., Demonstrator of Operative Dentistry.
H. H. STREET, D.D.S., Demonstrator of Mechanical Dentistry.
EDW. HOFFMEISTER, Ph.D., D.D.S., Demonstrator of Chemistry.

Assistant Demonstrators.

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W. G. FOSTER, D.D.S., Dean, No. 851 N. Howard St., Baltimore, Md.

Author

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